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Frontispiece
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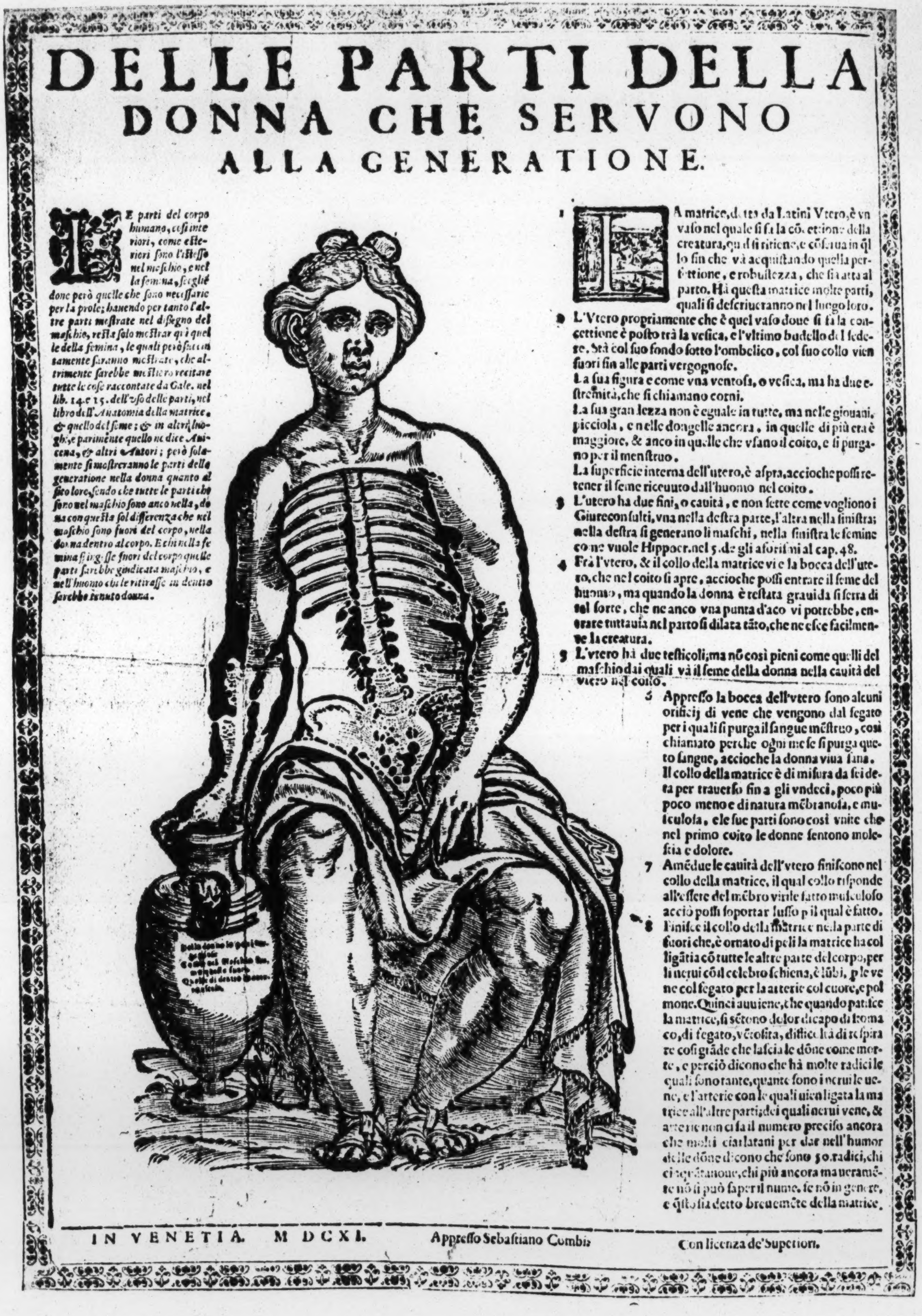

DELLE PARTI DELLA DONNA CHE SERVONO ALLA GENERATIONE.

LE parti del corpo humano, coſi interiori, come eſteriori ſono l'iſteſſo nel maſchio, e nella femina, ſcegliẽdone però quelle che ſono neceſſarie per la prole; hauendo per tanto l'altre parti moſtrate nel diſegno del maſchio, reſta ſolo moſtrar qui quelle della femina, le quali però ſuccintamente ſaranno moſtrate, che altrimente ſarebbe meſtiero recitare tutte le coſe raccontate da Gale. nel lib. 14. e 15. dell'vſo delle parti, nel libro dell'Anatomia della matrice, & quello del ſeme; & in altri luoghi, e parimente quello ne dice Auicena, & altri Autori; però ſolamente ſi moſtreranno le parti della generatione nella donna quanto al ſito loro, ſendo che tutte le parti che ſono nel maſchio ſono anco nella donna con queſta ſol differenza che nel maſchio ſono fuori del corpo, nella donna dentro al corpo. E ſe in nella femina ſi vſciſſe fuori del corpo quelle parti ſarebbe giudicata maſchio, e nell'huomo chi le ritiraſſe in dentro ſarebbe tenuto donna.

1 LA matrice, detta da Latini Vtero, è vn vaſo nel quale ſi fa la cõcettione della creatura, qual ſi ritiene, e cõſerua in q̄llo fin che và acquiſtando quella perfettione, e robuſtezza, che ſia atta al parto. Hà queſta matrice molte parti, quali ſi deſcriueranno nel luogo loro.

2 L'Vtero propriamente che è quel vaſo doue ſi fa la concettione è poſto trà la veſica, e l'vltimo budello del ſedere. Stà col ſuo fondo ſotto l'ombelico, col ſuo collo vien fuori fin alle parti vergognoſe.

La ſua figura e come vna ventoſa, o veſica, ma ha due eſtremità, che ſi chiamano corni.

La ſua grandezza non è eguale in tutte, ma nelle giouani, picciola, e nelle dongelle ancora, in quelle di più età è maggiore, & anco in quelle che vſano il coito, e ſi purgano per il menſtruo.

La ſuperficie interna dell'utero, è aſpra, accioche poſſi retener il ſeme riceuuto dall'huomo nel coito.

3 L'utero ha due fini, o cauità, e non ſette come vogliono i Giureconſulti, vna nella deſtra parte, l'altra nella ſiniſtra; nella deſtra ſi generano li maſchi, nella ſiniſtra le femine come vuole Hippocr. nel 5. de gli aforiſmi al cap. 48.

4 Frà l'vtero, & il collo della matrice vi è la bocca dell'utero, che nel coito ſi apre, accioche poſſi entrare il ſeme del huomo, ma quando la donna è reſtata grauida ſi ſerra di tal ſorte, che ne anco vna punta d'aco vi potrebbe, entrare tuttauia nel parto ſi dilata tãto, che ne eſce facilmente la creatura.

5 L'vtero hà due teſticoli; ma nõ così pieni come quelli del maſchio dai quali và il ſeme della donna nella cauità del vtero nel coito.

6 Appreſſo la bocca dell'vtero ſono alcuni orificij di vene che vengono dal fegato per i quali ſi purga il ſangue mẽſtruo, così chiamato perche ogni meſe ſi purga queſto ſangue, accioche la donna viua ſana.

Il collo della matrice è di miſura da ſei deta per trauerſo fin a gli vndeci, poco più poco meno e di natura mẽbranoſa, e muſculoſa, e le ſue parti ſono così vnite che nel primo coito le donne ſentono moleſtia e dolore.

7 Amẽdue le cauità dell'vtero finiſcono nel collo della matrice, il qual collo riſponde all'eſſere del mẽbro virile fatto muſculoſo acciò poſſi ſoportar luſſo p il qual è fatto.

8 Finiſce il collo della matrice nella parte di fuori che, è ornato di peli la matrice ha colligãtia cõ tutte le altre parte del corpo, per li nerui cõ il celebro ſchiena, è lũbi, p le vene col fegato per la arterie col cuore, e polmone. Quinci auuiene, che quando patiſce la matrice, ſi ſẽtono dolor di capo di ſtomaco, di fegato, vẽtoſita, difficoltà di reſpirare coſi grãde che laſcia le dõne come morte, e perciò dicono che hà molte radici le quali ſono tante, quante ſono i nerui le vene, e l'arterie con le quali uien ligata la matrice all'altre parti; dei quali nerui vene, & arterie non ci ſa il numero preciſo ancora che molti ciarlatani per dar nell'humor delle dõne dicono che ſono 50. radici, chi cinquãtanoue, chi più ancora ma veramẽte nõ ſi può ſaper il nume. ſe nõ in genere, e q̄ſto ſia detto breuemẽte della matrice.

IN VENETIA. M DCXI. Appreſſo Sebaſtiano Combi. Con licenza de' Superiori.

Fugitive Sheet, Venice, MDCXI

[See Pages 196, 208]

[From Mercurialis: Praelectiones Patavinae, Venice, 1603]

ANNALS OF MEDICAL HISTORY

Volume V Autumn, 1923 Number 3

EARLY ANATOMICAL FUGITIVE SHEETS

By LEROY CRUMMER, M.D.

OMAHA, NEB.

MODERN poster advertising reached its culmination during the great war and the beautiful design and general attractiveness of these posters led to the collector's mania, and many of these evanescent prints now repose in the cabinets of enthusiastic amateurs. But this period did not mark a new development of poster design, since advertising by means of a single printed sheet is as old as printing itself. In fact, the very earliest impressions of the presses were almost equally distributed between single sheet proclamations and almanacs both of which survive with an uninterrupted history to the present.

Early proclamations both ecclesiastical and governmental were issued in poster form and the presence of bulletin boards in our college halls and the nail studded tree at the rural four corners is a relic of a custom as old as the printed page. Many a political campaign was conducted in England by means of broadsides and many a minor author achieved local distinction by means of a poem printed upon a single sheet. Artists and engravers also used this means of expression, and even some of the most celebrated of the artists and engravers of the Renaissance made plates of poems and fables of such excellence and beauty that these prints are a delight even today. The trade card and the price list, with and without illustrations, are also found among the early fugitive sheets.

The art of illustration which had become an important part of manuscript writing was rather slow in finding a place in the printed page, but an occasional book even in the seventh decade of the fifteenth century contained woodcuts. It was not until 1480, however, that they were freely used, but soon after this date, woodcuts in books on medicine illustrated more or less anatomical detail. Among the very first of this type was the bleeding manikin which was used both as a book illustration and as a fugitive sheet. A serial study of this single figure would show the entire history of the art of illustrating and the art of bleeding up to the time of Louis. The Zodiac man, developed entirely from the astrological charts, survives in the almanacs of today, and a combination of the Zodiac man and the bleeding manikin was frequently used in the purgation calendars of the Renaissance. The graphic anatomical incunabula represent an important epoch in the development of printing and of anatomy. The combination of letterpress and seals or emblems in the form of broadsides, was soon followed by the single sheet with the woodcut predominating.

The medical profession was not slow to adopt this form of publicity and many of these sheets are of the greatest interest in the study of the historical and sociological development of medicine. The majority of such printed broadsides then, as now, pertained to the irregular by-products of medicine, and the appeal was to the less enlightened of the public in the form of illustrations of myths, monsters and the brilliant results of operations. Hollander has shown that many of these monster sheets are a source of information concerning the development of medical tenets of the time; more especially as denoting the spread of knowledge of medicine among the people.

Included in the very rare impressions of the early presses were fugitive sheets representing human anatomy, and as such sheets were evanescent and easily destroyed, very few have survived. The few that are still accessible present a phase of the growth of anatomy and anatomical illustration that is not without interest. Probably the earliest known fugitive sheets showing definite anatomical details are the skeletons distinguished by the names of the artists, the Hela and Wechtlin skeletons. These two figures, originating as broadsides, were also frequently used, more or less modified, as book illustrations at a slightly later period. These skeleton figures appeared in 1493 and 1517. A very few sheets of varying types may be assigned to the period from 1520 to 1538, but in the period from 1538 to 1580, fugitive sheets are comparatively common. Anatomically, artistically, and even commercially, these fugitive sheets reached the height of their development in the figures of Remmelin, 1613, but imitations of Remmelin were issued as late as 1683.

The literature concerning fugitive sheets is extremely meager. Choulant[1] gives a short discussion, and a rather extended check list of the known sheets in his celebrated work, but even as corrected by Mortimer Frank, 1920, it is by no means complete, and his inclusive dates are erroneous in that he makes no mention of any of the sheets, except the skeleton, appearing before 1538 or after 1590. Sudhoff[2] has given us a careful analysis of the development of the Hela skeleton. Weindler[3] has been particularly interested in fugitive sheets from the gynecological standpoint, and gives illustrations of three of the Eve plates. Hollander[4] also devotes a short chapter to the anatomical fugitive sheets in his latest book.

Several of these sheets fell into my hands almost by accident and so aroused my interest that during the year, 1922, I made a careful inquiry for them in many museums and libraries of Europe. There are only two in the British Museum; one, the Wechtlin skeleton, was indexed and catalogued as a fugitive sheet, and the other, a very large sheet showing the Hela skeleton was unknown until my inquiry uncovered it, carefully folded in a copy of Magnus Hundt, 1501. In the Wellcome Historical Museum, there are two, the male and female C.B. copperplates with the letterpress in English and with several superimposed flaps. These are found pasted inside the covers of a fourteenth century manuscript, and can definitely be dated about 1550. I could find none in the libraries of the College of Surgeons, or the College of Physicians, and there are none in the Bodlian Library. I was unable to find any in Paris, although I suspect that this was perhaps due to my bad French rather than to a total absence of such sheets. A search which I made in the Bibliothèque Nationale, both in the Library and the Bureau of

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[1] Geschichte der Anatomischen Abbildung, Leipz., 1852.

[2] Studien zur Geschichte der Medizin, Vol. IV, Leipz., 1908.

[3] Geschichte der Gynakologish-Anatomischen Abbildungen, Dresden, 1908.

[4] Wunder, Wundergeburt Wundergestalt, Stuttgart, 1921.

Prints, disclosed no trace of fugitive sheets. There is one in St. Mark's library in Venice, a very interesting copy of the female figure of Remmelin, dated 1683, with numerous superimposed flaps. There is one known in Amsterdam, which I did not see, and a duplicate of this one is reported to be in the library at Copenhagen. There is one in the Surgeon General's Library, the Adam of the Vogtherr series of about 1560, but unfortunately, so imperfect that neither date nor printer can be determined. The Boston Medical Library, the Library of the College of Physicians in Philadelphia, and the John Crerar library, Chicago, have none. Dr. George L. Laporte, New York, has a copy of the Hela skeleton, 1493. Dr. J. G. deLint of Gorinchem, Holland, has several of these sheets including a colored print of the viscera manikin, which first appeared in Von Gersdorf's "Feldtbuch der Wundtartzney,"[5] and the very celebrated one representing the anatomy of man, in which the artist has used the features of Vesalius. He has a proof impression of Vogtherr's Eve dated 1625, thirty years at least after any other known variant of the Vogtherr figure, and the Schonbornio skeleton, *circa* 1590.

I have been fortunate in securing ten definite early anatomical fugitive sheets, two of which are unique, and eleven others, Ryff's ten plates, and the Hela-Gruninger skeleton, which may be placed in this same class. Two C.B. copperplates with a single superimposed flap were found pasted within the covers of an *editio princeps* of the Fabrica. Choulant[6] says that the copies of these plates which he had seen were cut to the border so that it could not be determined whether there was letterpress or additional figures upon the margin. My copies show no additional figures, but there is a column of letterpress at each side and a title above. The letterpress is in Flemish. Soon after making this discovery, I was offered through a dealer in Germany the squatting figure broadside. This is supposed to be unique as a fugitive sheet, although the same figure exactly appeared in smaller size in "Eyn Gert Artzney die hoc noch steet," 1525. Sometime later I found an unknown Italian fugitive sheet, dated 1611, laid in between the leaves of an elephant folio of Cowper's anatomy. I have the Wechtlin skeleton and viscera manikin folded to fit and inserted as illustrations in Von Gersdorf's "Feldtbuch." These figures are in perfect condition. Quite recently I was able to add four of these sheets of a rather late date. The Vogtherr Eve dated 1589, and a remarkable Vogtherr Adam, being one of the two of these sheets which have survived, dated 1594; the Schonbornio skeleton and the Vesalius plate, the latter two, while less rare than the others, are nevertheless interesting. I have, of course, the Gruniger-Hela skeleton in my "Hortus Sanitatis," 1497. In addition, I was lucky enough to find neglected in a bookshop in a western city, a volume marked "Ryff, 1541." A careful study of this showed it to be made up of ten sheets printed on one side only and folded in the center to form pages, so that without realizing it at the time of purchase, I had a complete set of Ryff's fugitive sheets which he published in 1541, and about which Vesalius voiced such a protest in his letter to Oporinus.

From a careful study of the descriptions given by Choulant, Sudhoff and Hollander, and a rather close inspection of the sheets, it would appear that these early anatomical fugitive sheets may be arranged in five classes as follows: (1) the skeleton sheets; (2) the Tabulae of Vesalius and its imitations; (3) the Adam and Eve plates; (4) the female figure alone, and (5) the male figure alone.

Sudhoff[7] has given a very satisfactory analysis of the evolution of the Hela skeleton. This and its subsequent modification, the Hela-Gruninger figure, he traces back to a drawing in a French manuscript in the Bibliothèque Nationale which was written in 1454. There can be no question after studying his figures and text, that Sudhoff's genesis of the skeleton figure is quite correct. He cites the parallel development of the same idea in the cut of the skeleton in "Calendrier des Bergers."[8]

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[5] Strasburg, 1517.

[6] *Op. cit.*

[7] Studien zur Geschichte der Medizin. Leipzig., 1907–12.

Voynich and Garrison[9] have studied the use of the skeleton figures in the woodcut borders of the early French books. The same evolution may be traced later in the figures of the "Dance of Death," which were so popular throughout the sixteenth century, and of which Holbein was, of course, the master. In the skeletons of the "Dance of Death," it is not uncommon to see portions of the bony framework covered with shreds and tatters of desiccated epidermis particularly suggestive of the effect of wind and weather upon the dead body. This might perhaps offer an explanation as to the source of anatomical material which was used as a model in drawing the Hela skeletons and its prototypes. In spite of anatomical inaccuracies of the skeletons seen in the famous French borders, and the later cuts of the "Dance of Death," these frequently give a better impression of the true form of the skeleton than the more anatomically correct Hela-Gruninger blocks.

The Hela skeleton is first recorded as a fugitive sheet printed in Nuremberg, 1493. There was probably an earlier printing than this issued in Paris, since in all the known editions, the author is given as "Richardus Helian, Parisiis." The British Museum copy dated 1501, agrees with the Nuremburg edition in so far as the anatomical detail is concerned. The scrolls however are much more elaborate and a few show the legends reversed. The pediment is changed and the elaborate description in the upper right and left hand corners are boxed, and the mark of Wolfgang Steckel shows in the upper left hand box. The feet in the 1501 edition have only four metatarsal bones showing that a woodcutter and not an anatomist made the changes.

The Hela-Gruninger skeleton shows slight changes in anatomy and the legends are printed in lines and not on scrolls. It is found in at least two incunabula, Braunschweig, 1497, and the Latin "Hortus Sanitatis" of the same date. Gruninger is supposed to have owned this plate, since the cut is used in so many of his books printed about 1520.

A distinct advance in anatomical detail is shown in the Wechtlin skeleton which is definitely dated 1517. The skull, the vertebrae and the long bones are much more accurate, but the sternum, ribs and pelvis show little improvement over the Hela Figure.

The Wechtlin skeleton and its companion plate, the viscera manikin, while issued as fugitive sheets, were inserted to be used as illustrations in von Gersdorf's "Feldtbuch"[10] and so are much less rare than the Hela prints. It is generally believed that Wechtlin was responsible for the viscera manikin. There has been considerable discussion as to who the woodcutter of the skeleton was as it is technically inferior to the viscera manikin. Choulant assigns this former figure to Grien, but the keeper of the prints in the British Museum believes that Wechtlin cut both blocks.

The viscera manikin marked an advance not only on account of the beauty of its line but also because it represents the first anatomical fugitive sheet with smaller accessory cuts showing fine anatomical details.

In 1538 appeared the famous "Tabulae" of Vesalius which were in truth wall charts or "Fliegende Blätter" and represented an attempt to simplify teaching. All but the three skeleton figures, which were drawn by Calcar, are the work of Vesalius' own hands at a time when he was still trying to reconcile his own observations with the traditional authority of Galen.

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[8] Geneva, 1495.

[9] Figurations of Skeletal and Visceral Anatomy in the Books of Hours, ANNALS OF MEDICAL HISTORY, I, 225, 1917.

[10] Johan Schott, Strasburg, 1517.

The popularity of the "Tabulae" is attested by the host of imitations which appeared within the next year. Vesalius complained bitterly of these plagiarisms in a letter to Oporinus and mentions six towns where the imitations were printed, but not the name of the authors or printers. Choulant, who devoted much attention to this, succeeded in identifying four of the authors.

I have had an opportunity to study but one of these imitations, that ascribed to Ryff. According to Choulant, Vesalius referred to Ryff in this part of his famous letter:

> The fellow at Strassburg played a scurvy trick on scholars in that he so shamefully cramped the engravings which could not have been too large for the best results to scholars, and issued them as his own, wretchedly reproduced, and reduced in size out of all reason, with the text of the Augsburg version.

The identification has been accepted by subsequent authorities, especially by Roth, and so Ryff has come down in medical history as the superplagiarist of all ages.

There were at least five different editions of Ryff's work between 1541 and 1545, a popularity which was not equaled by any of the other imitations of the "Tabulae" nor in fact, by the "Tabulae" itself. The "Tabulae" was not reprinted and there were but two issues of the "Epitome," one Latin, one German, both in 1543. Two of the five editions of Ryff were as definite fugitive sheets as was the "Tabulae." One, "Ossium humani corporis descriptio"[11] is printed with Latin letterpress and is undoubtedly the original. The other,[12] is the same except for a change in two plates. Choulant, in his discussion of the question cites still a different edition.[13] In this edition, there may have been different plates, since Ryff changed not only the arrangement but the plates themselves in the different editions.

A careful comparison of the first edition of this work with the "Tabulae" will show that Ryff used ten double sheets on all of which, except the first, there are two plates, making a total of nineteen as against the six plates of the "Tabulae" with nine figures in all. Ryff's plates on pages *a* and *b* are definitely enlargements and improvements of the Dryander brain figures. Roth[14] says: "Ryff gives the skeletons; the plate of the veins, plate of the arteries, both drawn into a male figure; finally from the first plate of the 'Tabulae,' the male and female genitalia, both again drawn into the male figure." It is not claimed by Roth that the two figures of the muscle men are Vesalian. These two plates are adaptations from Da Carpi. At first glance, the three skeleton sheets seem to be reduced and reversed copies of the "Tabulae," but a careful inspection will show that even in these Ryff used discretion in copying, since the thorax agrees more accurately with the plate of Dryander (Figs. 1, 2 and 3) which is dated 1537 than with the skeleton of Vesalius. Vesalius depicts the sternum composed of seven distinct bones, while Ryff, adapting the Dryander plates, represents the sternum as a single bone with the costal attachments making it more correct than any of the "Tabulae" illustrations.

Even if the fundamental idea of these four other plates is Vesalian, improvement in placing the plates correctly in a figure drawn to scale, and the necessary modification of the fundamental figure to fit the natural lines of the figures represents an advance, the credit for which must be given to Ryff. Unprejudiced study of the "Tabulae" and the Ryff plates will show that far from being a mere copyist, Ryff was a true editor. He undoubtedly selected what in his judgment were the best representations of the anatomy of the time for this particular set of plates, and that he did not use more of the "Tabulae" was simply because, in his judgment, the Vesalian plates were not an advance on the then well-known authority, Dryander. In fact, if one may speak candidly of a hero, the "Tabulae" of Vesalius did not represent a great advance in anatomical knowledge however much it may have facilitated anatomical teaching.

---

[11] Strasburg, 1541.

[12] Paris, 1545.

[13] Des akkerfurtreffichsten, hochsten und adelichsten geschoppfs aller creaturem—das ist des menschen-warhafftige beschreibung oder anatomi—erstmals in Deutsche sprach verfasset. Strasburg, 1541.

[14] Andreas Vesalius, p. 123. Berlin, 1892.

I have been able to find in various libraries, fifteen works which bear upon the title-page the name of Walter H. Ryff. These embrace not only medicine and surgery, but mathematics and architecture. Such opportunity as I have had to examine some of these books confirms the opinion above stated, that far from being a plagiarist, Ryff was in reality one of the best editors of his time, a time when Erasmus, Gessner and Fuchs were proud to be considered mere editors.

Choulant cites extensively the other direct imitations of the "Tabulae" and a careful comparison of these imitations with the "Tabulae" would be worth study. Unfortunately, these imitations are so rare that the work can only be done where the sheets are available for comparison.

Little need be said of the imitations of the idea of the "Tabulae." Quite a number of sets of fugitive sheets representing visceral and muscular anatomy were printed, some as late as 1580, but all of them represented only pre-Vesalian conceptions.

In some respects the "Epitome" of Vesalius may be classed as fugitive sheets. While not fitting strictly the characteristics of a fugitive sheet, yet in this book Vesalius accepted the idea of the superimposed flaps introduced in the numerous fugitive sheets printed about 1539. The directions given at the top of the unlettered folios of the "Epitome" definitely show that Vesalius intended to have the figures on these sheets cut out and superimposed on the Adam and Eve plates.

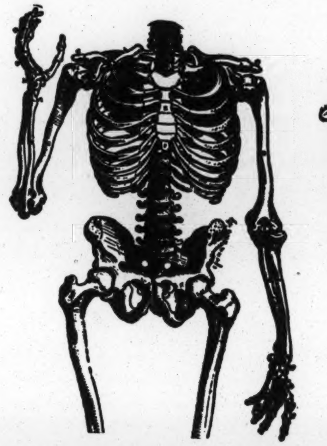


FIG. 1. ANTERIOR VIEW OF THE THORAX (FROM THE "TABULAE").

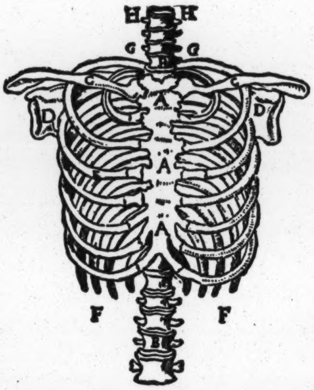


FIG. 2. THE THORAX (FROM "ANATHOMIA MUNDINI," DRYANDER, MARBURG, 1541). COMPANION PLATE SHOWING MUSCLES OF THE THORAX, DATED 1537.

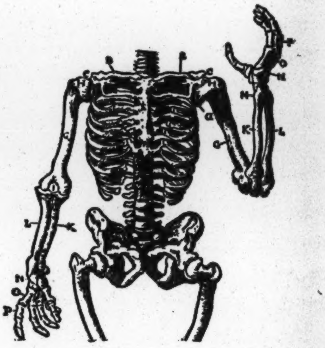


FIG. 3. ANTERIOR VIEW OF THORAX (FROM "OMNIA HUMANI CORPORIS," RYFF, ARGENTINA, 1541).

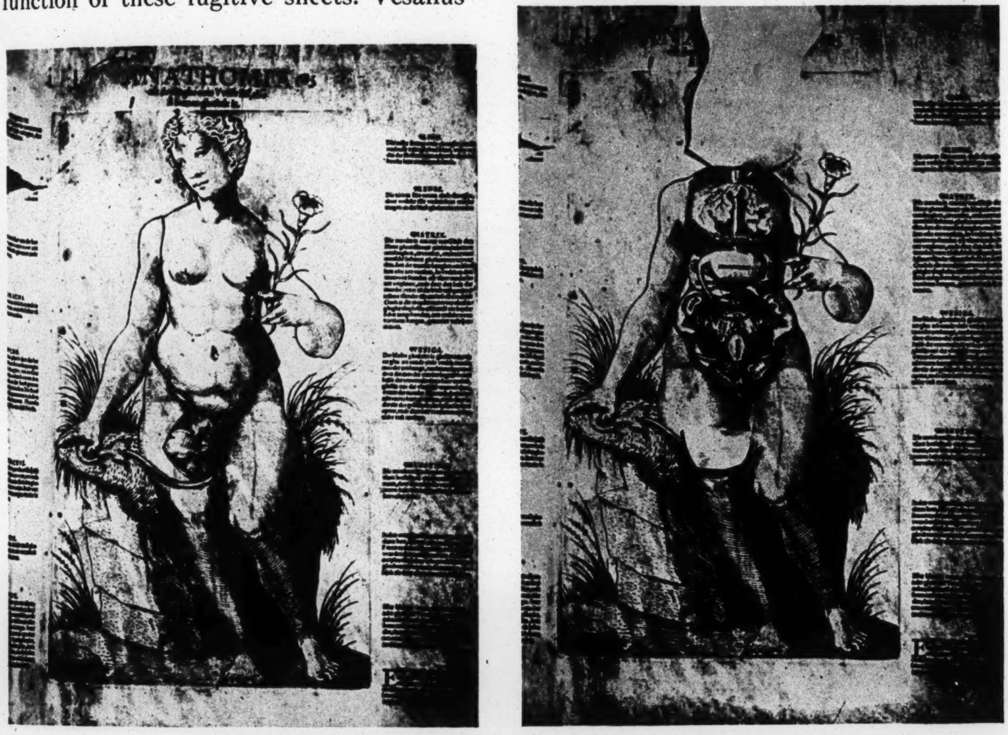
The earliest of the Adam and Eve fugitive sheets appeared between the time of the publication of the "Tabulae" and of the "Epitome," and all of them have the complete symbolism of the Garden of Eden. That this symbolism was thoroughly understood can be seen by following the evolution of the Adam and Eve idea in Vesalius. In the "Epitome," the skull replaces the apple in Adam's hand, but in the Geminus coppers which followed in 1545, the apple is found in its normal position and the skull and snake repose at the left foot of the figure. In both of these cuts, the fig leaf is lacking, but in the female figure the hand of

Eve naturally assumes the position of modesty which has since been conventional; and the apple and fig leaf, the skull and the snake fitfully recur in the reprints and imitations of Vesalius up until the time of Remmelin.

This symbolism is not without its importance in any attempt to analyze the function of these fugitive sheets. Vesalius' reaction to this symbolism is quite remarkable. In the "Epitome," there is a skeleton followed by a beautiful Adam and Eve plate, but in the "Fabrica," his overcorrection causes the Garden of Eden idea to be omitted, but the three wonderful skeleton figures are so charged with the subconscious symbolism of the philosophy of death that it was recognized eighty-three years later by the genius of that age who assimilated and transformed the idealism of these three figures into the graveyard scene of Hamlet.

Throughout this series of sheets in which the female figure is shown with the fig leaf, when the superimposed flap is lifted, the pregnant uterus with the cowering fetus in the classical "see no evil" position becomes the high light of the entire figure. The Adam and Eve cuts show purely pre-Vesalian anatomy and remained true to this type until 1590. Printed first with a single superimposed flap, within a few years there were several superimposed flaps, and the attention to detail and accuracy in cutting and pasting is surprising. In Remmelin, the culmination was reached and some twelve or thirteen flaps may be found on a single figure.

It has been a question as to which was the first of the Adam and Eve sets. Choulant cites the Sabio, the Guldenmundt and the Vogtherr sets as being printed in 1539 (Figs. 4 and 5). It is extremely probable that there was an example printed earlier, since the three similar sets appeared in the same year, and such coincidence would argue that these were copies of an earlier print.



FIGS. 4 AND 5. FIRST FUGITIVE SHEETS COPPERPLATED. DIRECT COPY OF THE GULDENMUNDT WOODCUTS.

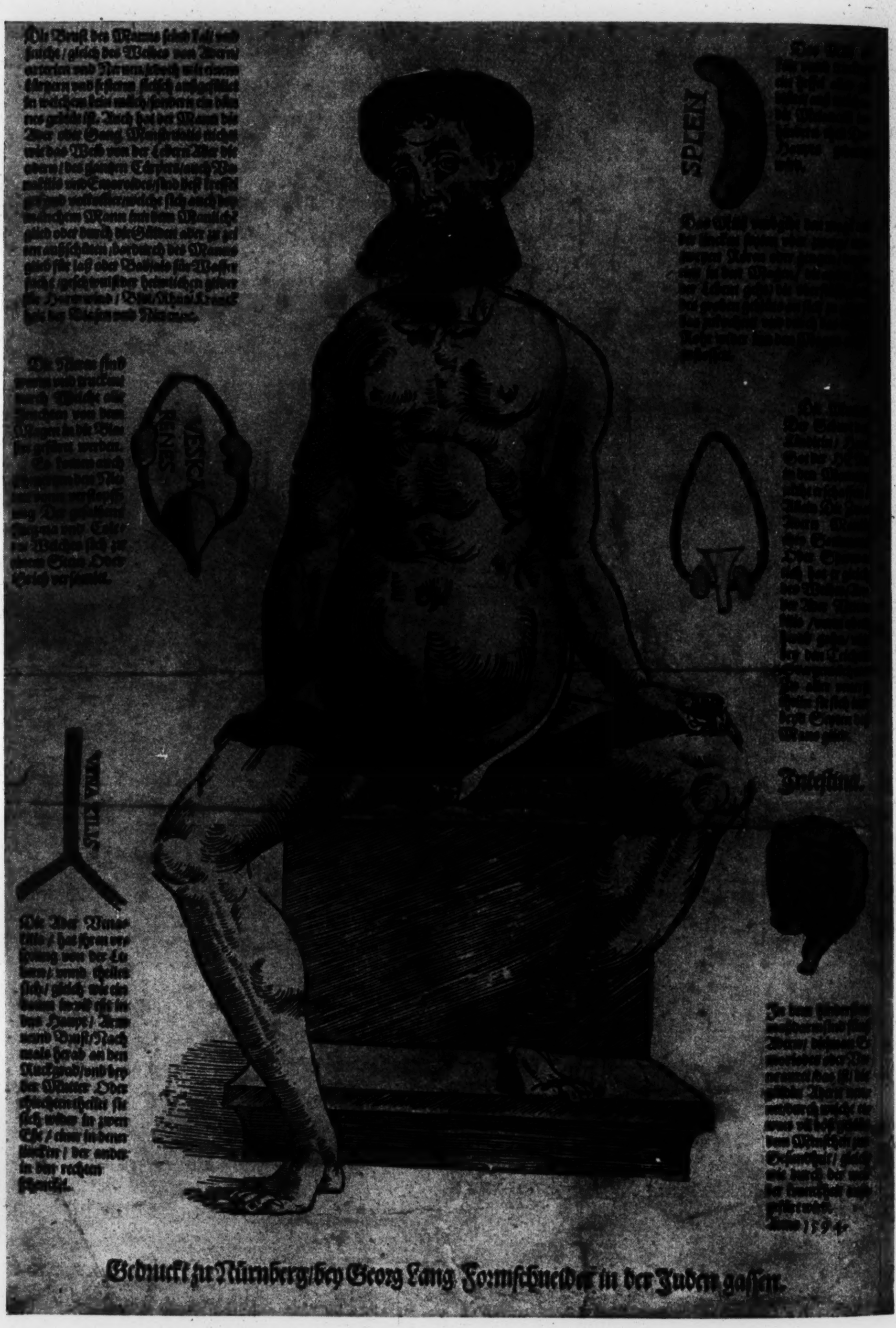

SPLEN
VESIC
RENES
VENA CILIS
Inteſtini
Anno 1594.
Gedruckt zu Nürnberg/bey Georg Lang Formſchneider in der Juden gaſſen.

Fig. 6. The Adam of the Vogtherr Series 1594. Only Perfect Copy Known.

The Jobst de Negker Eve cited by Weindler and carefully studied by Wickersheimer is definitely dated 1538. While no companion plate representing the male figure is known, it is possible that his was an inspiration for the numerous editions of the next year. It is of course possible that an Adam of this set may turn up, or a lucky discovery may even disclose an earlier set of the plates embodying the Adam and Eve idea.

As far as I can find, the Sabio sheets were issued only once. The Guldenmundt cuts were reproduced in copper by Cornelius Bosch (Bos) and probably printed first at Antwerp about 1540. At least one other issue of this particular set of coppers is known with the text in English and with several flaps. The Vogtherr set which was printed in 1539 seems to have been the most popular of all of these sheets, since it went through many editions and this list is certainly incomplete, as I have been able to identify at least three issues not mentioned by Choulant. Choulant gives his inclusive dates from 1539 to 1590, but there is a copy of the Adam plate dated 1594 (Fig. 6), and of the Eve plate as late as 1625.

The Adam and Eve plates reached their culmination with Remmelin, first published in 1613. The fugitive sheets after Remmelin show the female figure alone, a retrogression in the later history to a type of illustration almost identical with the early fugitive sheets inspired by the squatting figure of Ketam.

The squatting posture as shown in the famous Ketam illustration is the distinctive feature of the fugitive sheets showing the female figure alone. This frog-like attitude is found in each one of the set of five drawings which Sudhoff has so carefully studied. He attempts to trace this set of anatomical illustrations to Alexandria. While, of course, no drawing of this epoch is preserved, Sudhoff's argument is convincing and undoubtedly in this set of drawings, we have a fair idea of the extent of anatomical knowledge at Alexandria. The most beautiful of the codex drawings of the female figure is that of the Leipzig manuscript number 1,122 (1400) which has been used as an illustration both by Weindler and Choulant-Frank. In this particular miniature, there is a slight deviation from the frog-like posture, but the pregnant uterus with the cowering fetus is the prominent part of the picture. All the peculiarities of posture in the set of five are retained in the Ketam illustration (1493) which is one of the most beautiful of the famous Venetian woodcuts and such an advance over anything previously done that it is generally considered to be the first drawing made directly from a dissection. The squatting posture persisted in sheets showing the pregnant uterus, but there are at least two intermediate stages between the latest of the five figure series and the 1493 Ketam.

Dr. de Lint has a manuscript fragment of the Ketam which he dates in the middle of the fifteenth century. In addition to text, there is shown the lower half of a figure in the typical posture, but with the details of the gravid uterus pictured much clearer than in the Leipzig miniature.

The figure in the 1491 Ketam is an advance over this figure of de Lint's, but approaches neither the correctness of anatomical detail nor beauty of line of the figure of the 1493 edition and subsequent editions of Ketam. This same figure coarsely copied by an indifferent woodcutter and modified by use of parallel lines for shading is proabably the earliest of the fugitive sheets of this class (Fig. 7). It may be dated at least ten years earlier than the first of the Adam and Eve sheets. The woodcut is accompanied by a page of letterpress with the description of the various organs in Latin. The fugitive sheets printed later did not always show the typical frog-like posture, but the de Negker print, my Italian sheet (*Frontispiece*) and even the copy of Remmelin in St. Mark's library show attitudes which are nothing more than deviations from the squatting posture. The same fundamental

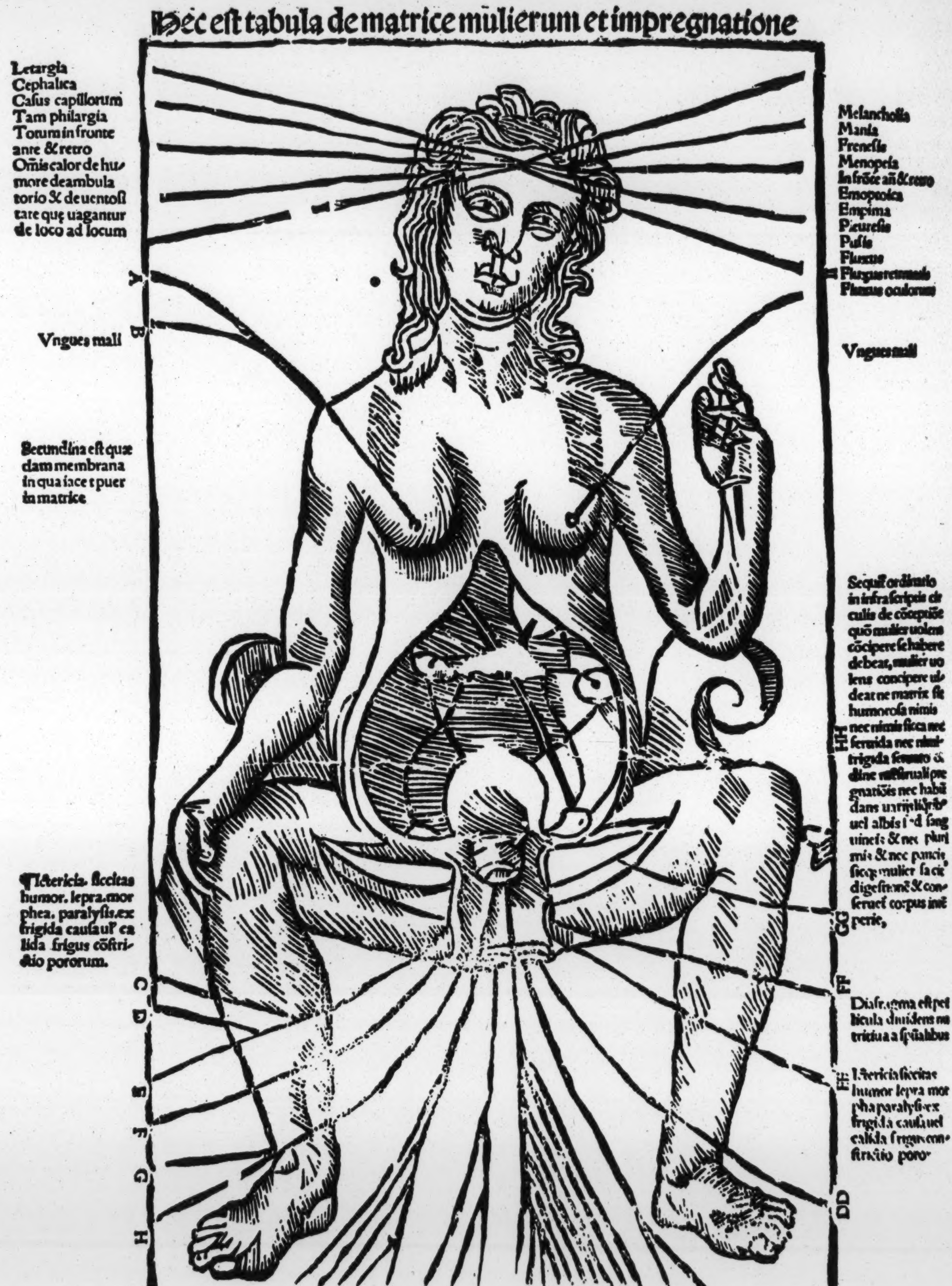

Hec est tabula de matrice mulierum et impregnatione
Letargia
Cephalica
Casus capillorum
Tam philargia
Totum in fronte
ante & retro
Omis calor de humore deambulatorio & de uentositate que uagantur
de loco ad locum
Melancholia
Mania
Frenesis
Menopeia
In frōte añ & retro
Emoptoica
Empima
Pleuresis
Pusis
Fluxus
Fluxus retmatis
Fluxus oculorum
A
B
Vngues mali
Vngues mali
Secundina est quaedam membrana in qua iacet puer in matrice
Sequitur ordinatio in infrascriptis de culis de cōceptiōe quō mulier uolens cōcipere se habere debeat, mulier uolens concipere uideat ne matrix sit humorosa nimis nec nimis sicca nec feruida nec nimis frigida feruato & dine nutrituali pregnatiōis nec habūdans uarijs liq. vel albis i d sanguineis & nec plurimis & nec paucis, sicque mulier faciat digestionē & conseruet corpus inē perie,
HH
GG
FF
Diafragma est pellicula diuidens nutricia a spūalibus
EE
Ictericia siccitas humor lepra morpha paralysis ex frigida causa uel calida frigus constrictio poror
DD
Ictericia. siccitas humor. lepra. morphea. paralysis. ex frigida causa uel calida frigus cōstrictio pororum.
C
D
E
F
G
H
I K L M N O P Q R S T V X Y Z & AA BB CC
Notanda sunt aliqua signa conceptionis ipsius mulieris, primum eius signum est quod ex parte colus cognoscitur. Si

FIG. 7. EARLIEST OF FUGITIVE SHEETS SHOWING FEMALE FIGURE ALONE, *ca.* 1525.

idea can be seen in Stephanus' plates, and in fact persisted in anatomical book illustrations even as late as Cesaerius, whose plates evoked Oliver Wendell Holmes' famous caustic comment. The Eve of the Guldenmundt and Vogtherr series also represented figures in attitudes which are closely related to this same posture.

So many more of the Eve than of the Adam sheets have survived that it seems extremely probable that even during the period of the popularity of the Adam and Eve sheets, the female figure was more frequently printed. The female figure alone followed closely in time sequence the skeleton figures and antedated the first of the Adam and Eve plates. The skeleton figures disappeared almost completely upon the publication of the "Tabulae" while the Adam and Eve sheets were printed in great numbers up to 1590 and even later, the female figure persisting for nearly another century (Fig. 8).

It is a natural inference that curiosity was the force which led to the production of such a large number of these sheets, and this curiosity was concerned particularly with the details of the female anatomy. Even of the popular Vogtherr plates, many more of the Eve sheets have survived, and later, only sheets representing the female figure alone were printed, at least so far as any traces are known in the fugitive sheets after 1590. We may likewise notice evidence of progression. At first, the only details worked out carefully were the reproductive organs, and in the female figures the uterus is represented as enlarged with a window showing the fetus. This tendency exists through the entire series of the Guldenmundt Vogtherr sheets, but by the time of Remmelin, it was necessary to have three plates, the male, the female, and the pregnant torso. In the sheets following Remmelin, the female figure alone is represented with no appearance of pregnancy, a very normal correction of primitive curiosity.

The only sheets representing the male figure alone are those printed by Schonbornio at Viiteberg about 1590. This was at a period when the Vogtherr Adam and Eve sets were still in great demand, but it appears that Schonbornio was influenced by quite a different idea. His male figure is perhaps a modification of the Vogtherr plate, but the posture of the seated figure is quite different, and the woodcutter has attempted to replace the bearded head of the older cuts with the features of Vesalius. Not satisfied with the first result; the artist has changed the famous hair line and the beard in each new issue of the woodcut (Figs. 9 and 10). There are at least two and possibly three variations of this plate which differ only in the shape of the beard and hair line, and it would appear that the woodcutter had tried to reproduce from memory the features of the great anatomist. Schonbornio also edited a plate of the skeleton which was a modification of the anterior view of the skeleton of the "Fabrica" so it may be assumed that Schon-

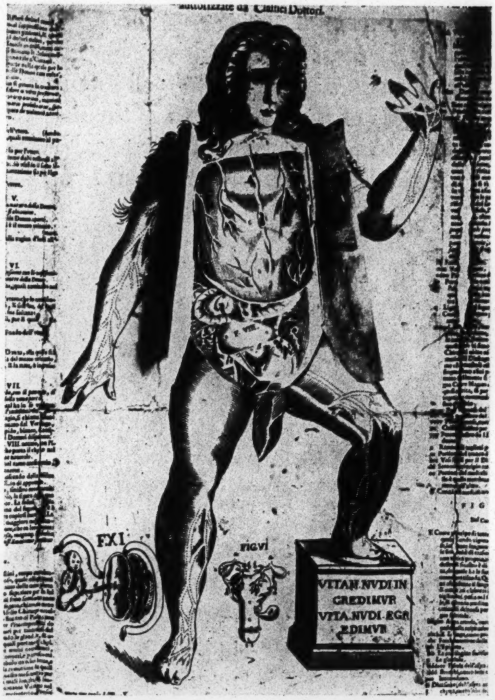
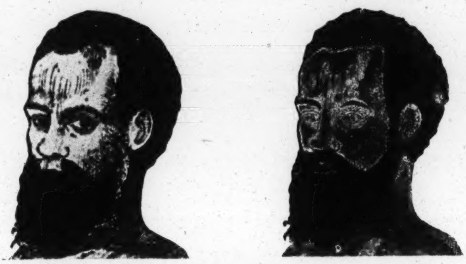


FIG. 8. THE LAST KNOWN FUGITIVE SHEET, 1683.

bornio's admiration for Vesalius was the reason of his activity in printing these fugitive sheets. It has been suggested, however, that the features of Vesalius were placed upon these sheets as a guarantee of the correctness of the anatomy represented but the visceral anatomy shown on the three superimposed flaps has many features definitely pre-Vesalian and the changes in the skeleton drawing are not a great improvement.

For the most part fugitive sheets were printed upon a good quality of soft paper rather thicker than that used in the making of books. The size generally approximated about 30 by 40 cm. The main figure is usually surrounded by descriptive text, though occasionally an extra sheet is added for letterpress. Decorative borders are not uncommon. Some of these borders are attractive in a general way, and occasionally the border approximates in beauty the best traditions of the printing art. The use of smaller cuts surrounding the main figure was introduced in the Wechtlin manikin and the use of these cuts prevailed in most of the sheets, although with variations in number and kind even in similar sheets. The newborn babe is found sitting beside Eve in the Vogtherr series and is very attractive. It is reminiscent of the Della Robia babies and gives the same touch to this picture as does the famous woman with the vase to the Zodiac figure of Ketam. Variations in spelling are an indication that they were printed before there was fixation of language, rather than evidence of bad spelling or copying. The general outline of the principal figure persisted fairly true to type throughout the whole history of an individual class. Innovations and improvements were concerned more with the details of the superimposed flaps than with any other part of the sheet. The single flap is found first in several fugitive sheets issued in 1539; at a somewhat later period we find two flaps and during a still later period four or more flaps. These flaps generally show great care in printing, cutting and pasting. The anatomy itself, however, does present some evidence of advance, particularly over the crude woodcuts of the graphic anatomical incunabula. In the prints of the later decades of the sixteenth century, there is a fairly accurate outline of the thoracic and abdominal viscera, but even in the latest, the horizontal diaphragm is still in evidence.



Figs. 9 and 10. These Heads Show Changes Made by Woodcutters in Reissuing Plates, *ca.* 1590.

In the sheets of the earlier period, the printing is usually in black, but a few of the earlier sheets may be found colored by hand. Comparatively early some attempt at color printing was made, and many of the later sheets represent fairly successful efforts at printing in colors.

Most of the classes show at least one example printed in Latin, but the other issues of the same block have the text in the vernacular. It is probable that the first edition was in Latin and that the text was translated into the vernacular in subsequent editions. This is perhaps a further indication that sets antedating the Vogtherr and Guldenmundt issues of 1539 have been lost.

There are so few sheets extant that it is extremely difficult to identify the city of origin. Even the Hela-Nuremberg print was probably a copy of an original from Paris, since Hela is spoken of as "Helian Parisiis." There is no doubt that later Paris took a lively part in the production of these prints. The printers of Venice also are represented in the check list, but the majority of the sheets are from the presses of the German cities actively engaged at the time in cheap printing. Few, if any, of the famous presses are represented in the list, nor do we have sheets from the printers of the University cities, as would have been the case were these sheets used for purposes of anatomical teaching.

The Wechtlin sheets are much more common than the other broadsides since they were used for inserts in the "Feldtbuch" and consequently have been preserved in the book itself, but even these were printed in different sizes for different editions by Gruninger, and the variants in the British Museum show that they were modified and issued by different printers. At least three variants are known of the skeleton and two of the viscera manikin.

The Hela skeleton has at least one variant, that in the British Museum in which the distinctive feature is the presence of only four toes. The Schonbornio manikin, to which was added the features of Vesalius, shows two and perhaps three attempts to reproduce the likeness of Vesalius and a careful study of these different issues will show typographical corrections and changes in fonts sufficient to indicate resetting of the letterpress as well as alterations in the woodcut. Dr. de Lint attempts to argue from the title of the Schonbornio skeleton beginning "Seu compages ossium humani corporis" that it was one of a series probably of three plates, but in his copy a black border blots out the first word of the title "ΣΚΕΛΕΤΟΝ" which seems to explain the use of the word "or."

In fact, in all the other fugitive sheets studied, no two are precisely alike, and each new sheet which happens to come into the market is described as unique. This would argue that many editions may have been printed of which no copy survives, since of such editions as are known, only one copy has survived.

These sheets were issued at a time when there was no copyright protection and comparison shows that the original plates were copied, sometimes exactly, sometimes carelessly, sometimes fantastically, and published by different printers, and such changes went on successively until the original figure was altered beyond recognition, and the accessories, the form of the letterpress, the language, the decorations, and even the figures themselves were altered to suit the whim of the woodcutter or printer.

In the few books in which we find reference to these fugitive sheets, their use has been a matter of but casual speculation. Choulant says that they were used for display purposes in barber shops, bathhouses and apothecary shops. Considering the very large number published, this would have been a very narrow outlet. Dr. de Lint has recently investigated the question and his explanation is worthy of consideration. He believes that they were printed for the use of students practically as are our quiz compends of today; that books were too expensive for many of the students and some cheaper substitute had to be found, and this substitute was the fugitive sheet. As a further argument, he states that in the latter part of the sixteenth century, there was a marked decrease in the price of books on anatomy and that coincident with this decrease, the fugitive sheet went out of existence.

While undoubtedly these sheets were hung in various places as mentioned by Choulant, and while they may have been printed for the use of the students, there must have been a much wider distribution of them than could possibly be represented by the ideas of either Choulant or de Lint. Examples are very scarce at the present time, and yet the very number of different woodcutters, presses and printers represented in the sheets that we do know, argues an extensive distribution in the sixteenth century. That they were not, primarily, for medical students, is shown by the large proportion which are printed in the vernacular at a period when the medical student prided himself upon his Latin, and when medical instruction was wholly in Latin, save the departure that had been made by Paracelsus. It was thoroughly understood at that time that an education was necessarily an expensive luxury, and it is therefore hard to believe that medical students would buy and study, fifty years after the wonderful books of Vesalius and his successors were available, anatomical compends printed in the vernacular and typifying Galenic anatomy.

Viewed from all angles, it would appear that these sheets were printed not for students, but for the common people, and printed in large quantities because they were anxiously sought for by the people in general as giving a long sought answer to a question based upon a primitive psychological desire. In support of this interpretation, one might cite the large number of these sheets printed in a common language. There are fugitive sheets printed in German, French, English and Italian, which would show an almost universal demand for such information as could be furnished by this means. If, as Jung states, our own psychological development represents the development of civilization itself, we can easily assign to the Renaissance, the period of adolescence. And one of the great queries of adolescence of the race or of the individual is, "Where do I come from?" The titles and legends of these early fugitive sheets seem further to confirm this position. The title "Abconterfeyung eins Mann's Leib, wie er inwendig gestalt ist," etc. (Portrayal of a man's belly; how he is formed internally, and of a woman's belly; how she is formed internally) is found in the entire Guldenmundt and Vogtherr series, and the legend, *Nosce te ipsium* (Know thyself) is frequently found on the French prints. Further as we study the popular Adam and Eve and the squatting figure sheets, beginning with Ketam and going through the Guldenmundt series up to and including the sheet at St. Mark's, we have before us a picture in which the greatest importance and stress is laid upon the female organs of generation, and in which the pregnant uterus with the fetus in the classic position, is the central part of the arrangement. This was not, I think, a pornographic appeal, but as I have suggested, was to meet an interest in a question as old as the world, and fundamental in the religious and artistic development of the time.

To me this seems to justify the conclusion that the people in general were so eager to get such information that they demanded these fugitive sheets, and the demand was met by edition after edition and print after print, from the presses the country over, of pictures which would seem, at least in a physical sense, to give an answer to this question.

CHECK LIST OF RECORDED FUGITIVE SHEETS

The following check list is based primarily on Choulant's original description of these plates. The additions made by Frank have been incorporated and also the sheets described in accessible literature. A description of the fugitive sheets (several not previously recorded) found in various libraries and private collections, as well as those of my own collection, have been included. The list is rearranged to fit the classification considered above. After each formal title is listed the authority which has been cited in this article. Where no asterisk is inserted, the sheet has been described only; a single asterisk following the name indicates reproduction by the authority quoted. Those seen and studied by the author are marked by two asterisks, and those in the author's collection are marked by three asterisks.

CLASS ONE, SKELETON SHEETS

TYPE 1. SINGLE SHEET: THE HELA SKELETON.

Anathomia ossium corporis humani. Nurenberg, 1493. 53 cm. high. Letterpress in Latin. (Choulant,* Sudhoff,* Hollander.*)

This is the earliest known fugitive sheet, although it is quite probable that a similar sheet antedating this one was printed in Paris, since the sheet is attributed to Richard Hela of Paris. From many standpoints, it is the most important of all the sheets, and its part in the development of anatomy and anatomical illustration has been carefully considered by Choulant, Sudhoff and Hollander.

VARIANT A: Same Title. 35 × 25 cm. The bony parts of the skeleton have been tinted a light ocher. It is dated Nurenberg, 1493. (Dr. George L. Laporte, New York.**)

VARIANT B: *Anathomia Ossium totius humani Corporis.* Leipsig, 1501. 33 × 22 cm. Letterpress in Latin. (British Museum.**)

Underneath the title, which is printed above a black border, is a subtitle "Anathomia ossium." There are some slight variants in the figure, especially noticeable in the feet, which have only four tarsal and metatarsal bones. The letterpress in the upper corners has a different arrangement and the block in the upper right hand corner has the Wolfgang Stoeckel printer's mark. In the upper left hand corner there is a scroll instead of the square block in which is the date 1501. The scrolls are much more elaborate and in several the Latin name is inverted. The pediment is larger and more distinctly outlined.

VARIANT C: *Anathomia Ossium corporis humani.* Strassburg, 1497. (Choulant.***)

The so-called Gruninger block modified from the original Hela reduced in size has the names of the bones printed in simple type lines instead of the scrolls of the original. This figure was perhaps a fugitive sheet, but it is frequently used as a book illustration. The first that I have been able to identify is in the "Hortus Sanitatis," 1497, and Braunschweig, same date. This block appeared in many of the Gruninger books published from 1520 to 1530, and is supposed to have belonged to him as he used it indiscriminately.

TYPE II. TWO SHEETS: (a) THE WECHTLIN SKELETON. (b) THE VISCERA MANIKIN

(*a*) *Ein contrafacter Todt mit ein heimen fugen und glyderen und gewerhem, vsz beuelh loblicher gedachtnusz hertzog Albrechts bischoff zu Strasburg, durch meister Nichlaus bildhawer zu Zabre worlich in stein abgehawen, und noch anszoig rechter gewisszer Anatomy mit sein latinischen namen verificiert.*

Inserted in "Feldtbuch der Wundtartzney" by Hans Gersdorff, Strasburg, Johan Schott, 1519. 36 × 27.5 cm. Letterpress in German; anatomical names in Latin. Printer's mark of Johan Schott.(***)

Front view of the skeleton with head slightly turned to right. Arms hanging down. Latin names of bones cut on plate. In the upper left hand corner the date, 1517. Below the date are printed twenty-four verses of moral reflections upon death.

This was designed as a fugitive sheet and not intended for a book illustration, but it was folded in the center and bound in Gersdorf as given above. A woodcut struck from the same block is also folded and bound in Phryesen's "Spiegel der Artzney" Strasburg, Joh. Gruninger, 1518.

(*b*) Viscera Manikin. *Anatomia Corpori humani,* 1517. Above the plate is printed; "*Ein contrafact Anatomy der inneren glyderen des menschen durch den hochglerten physicum und medicine doctorem Wendelinum hoch von Brackenaw zu Strasburg, declariert und eygentlich in beysein viler Scherer und Wundartzt grundlitch durchsucht.* Johan Schott, Strassburg, 1517. 36 × 21.5 cm. Letterpress in German; anatomical names in German. Below the plate forty-six verses printed in three columns.***

This plate is also folded and inserted as a book illustration in Gersdorf's "Feldtbuch der Wundartzney," Strasburg, 1519.

The plate was drawn and engraved by Hans Wechtlin (Veuchtlin) of Basel, called the Master with the crossed Pilgrim's staves, on account of his monogram. The drawing excels the Skeleton (*a*), which was evidently done by a less skilful hand, although attributed by the keeper of the prints in the British Museum to the same artist. This peculiar dissection with the five point liver and a perfectly horizontal diaphragm may be followed through most of the fugitive sheets up to 1600. This is also the first introduction of accessory figures which persisted throughout the entire history of fugitive sheets.

VARIANT A of (a): Same title.

This sheet is undated and does not have the printer's mark. The typographical arrangement of the title and verses is slightly different; a few slight changes in shading. It is 33.5 × 25.5 cm. Letterpress in German; anatomical names in Latin. (British Museum.**)

According to Choulant, this same woodcut, without title or verses, appeared in Phryesen's "Spiegel der Artzney," Strassburg, Grüninger, 1518. Dr. Harvey Cushing showed me the same cut in Albucasis, Johan Schott, 1532.

VARIANT A of (b): Viscera Manikin.

Title cut off, date omitted, a few changes in spelling of legends; the poetry in three columns, and no line between the figure and verses. (DeLint.**)

TYPE III. SINGLE SHEET: SKELETON

Sev Compages Ossium Humani Corporis. Parte Anteriore Expressa. 30 × 39 cm. N. D. Black line border. Letterpress in Latin. (DeLint.**)

This plate is definitely assigned to Shonbornio, and therefore must be dated about 1590. Front view of a skeleton with the right arm resting on the gravedigger's spade, and the left hand supporting the skull with the base presenting. The sternum shows five divisions. Surrounding the main figure are seven smaller figures; at the right, lateral view of the skull; to the left, front view of the sacrum. Letters are drawn on the bones which refer to the accompanying text which surrounds the woodcut.

This skeleton is a direct adaptation of the Vesalius skeleton in the Fabrica. The skull is tilted forward and the left arm elevated, which is not found in the original. The general drawing is not as good as the Vesalius skeleton.

VARIANT A: ΣΚΕΛΕΤΟΝ *Sev Compages Ossium Humani Corporis. Parte Anteriore Expressa.****

Exactly the same figure; practically the same letterpress. A few typographical errors have been corrected. Certain of the subtitles are printed in upper case roman letters instead of upper case italics.

Type iv. Two Sheets:

Osteotome i. ossium bumani divisio ex Galeno praecipue. Paris, Christianum Wechelum, 1536. Folio. Letterpress in Latin. (Choulant.)

Front and back view of erect skeleton in woodcut; drawing better and more exact as to anatomy than Da Carpi, Dryander or Ryff. The woodcut is beautiful and distinct.

These two sheets can also be found in the Greek edition of Galen, Basel, 1538. Folio v.

Type v. Single Sheet: Skeleton

By il Simoleo. 41½ × 30 cm. (Choulant.)

Copperplate engraving of the skeleton by Giovanni Battista Franco (called il Simoleo) representing a profile view of a human skeleton down to the knees, looking to the left and extending half way into the border, showing at the top a skull and on the right side, the bones of the extremities.

Franco was born in 1498 and died in 1561 or 1580.

CLASS TWO: THE TABULAE AND IMITATIONS

Type i. Six Plates:

Des Andreas Vesalius secbs anatomifcbe Tafeln vom Jabre, Imprimebat B (ernardinus) Vitalis, Venetus, sumptibus Joannis Stephani Calcarensis. 1538. Large folio. Letterpress in Latin. (St. Mark's Library, Venice.**)

These are probably the most famous of all fugitive sheets. As is well known only two sets exist; one in St. Mark's Library, Venice, and the other owned by Sir Sterling Maxwell, who made an exact reprint and published thirty copies, which he generously distributed so that most of the large libraries have a copy.

More recently Holl-Sudhoff[1] reproduced these plates, in a large edition. Unfortunately, difficulties in printing required that they be reproduced in three-fourths size of the original.

After Vesalius issued these plates in 1538, many imitations appeared; some merely copying the idea and others being direct plagiarisms of the plates.

Type ii.

Jobst de Necker; *Ein gar kunstlicb allem Leib- und Wundarrzten nutzlicbes werk 6 figuren mit inbalt aller blut-Scblag und Flecbsadern sant den Gebeinen des ganzen Leibes.* Augsburg, 1539, 6 leaves; folio. Letterpress in German. (Choulant.)

The work of the Augsburg wood engraver, Jobst, or Jobst de Necker (Negker). This sheet dealing with the veins, arteries and nerves, is by all means the truest and best copy of Vesalius' first six plates. However, in the first six plates of Vesalius, there were none of the nerves, and inasmuch as the title of the Necker sheet has the word "Flechsadern" it is probable that the Marcolio sheet was added.

Type iii. Twelve Sheets:

Ausslegunk und beschreybung der Anatomia. Gedruckt, zu Nurenberg, durch Hans Guldenmundt, 1539. 4to. Letterpress in German. (Choulant.)

Twelve sheets with crude woodcut engravings between the text representing the organs of the thoracic and abdominal cavities, conveying popular instruction in anatomy and remedy for disease. There are no entire figures. The woodblocks were made by Hans Weygel. It was republished at Ulm, 1541.

Guldenmundt was a wood engraver and printer in Nurenberg between 1520 and 1546.

Type iv. Six Sheets:

Ein gar kunstlicbe, aller Leyb und Wundartzen, aucb andrer kunsten Liebbavern, bocbnutzlicbs Werk in secbs Figuren gebracbt, mit kinbalt aller blutcblag und Flecbsadern, samp den gebaynen des guntzen Leybs. Cologne, N.D. Folio. Six leaves printed on one side only. Letterpress in German and Latin. (Choulant.)

Below the preface is a rather large engraving showing the liver and spleen; also two smaller engravings showing the genitals of the two sexes.

The second sheet contains a large woodcut of the liver and the vena cavæ with their roots. The third sheet shows the heart, kidneys, aorta and its branches. The other three sheets show the skeleton viewed from front, back and sides.

The engravings are effective; those of the skeletons being particularly good, but all of the anatomy is pre-Vesalian, showing the liver with five or six lobes, and the heart situated directly in the center after the manner of Galen; the uterus is now shown without horns. The skeletons are colored gray and the background illuminated. Necker's name is not mentioned, but this may be a copy of his work.

Type v.

Aegidius Marcoliois; *Cerebrum animalis facultatis fons et principium sensum voluntarium per nervos communicians ab se et dorsali medulla enatos universo corporso.* Cologne, 1539. Letterpress in Latin. (Choulant.)

This is a sheet printed on one side, representing the brain natural size; the upper part cut horizontally open so that two lateral ventricles become visible; beneath the brain are the cranial nerves, also tongue and piece of the palate. Drawn in a bold and free manner; nerves unnaturally enlarged; some of the words and letters cut in wood; others printed.

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[1] Leipzig, 1920.

This sheet must have been published in 1539 and the publisher probably had only Vesalius hand drawings or a copy in his possession. This plate is not among the first six Vesalian plates which represented the system of the veins and arteries.

The name Marcolio was not known to Vesalius; the latter seems not to have seen this very rare sheet, but only a copy of it, but that the drawing was Vesalian is shown by the cut (Page 319) of the 1543 "Fabrica," and that of the 1555 edition (Page 512).

Type vi. Ten Sheets:

Omnium Humani Corporis Partium Descriptio. M. Gualtheri H. Ryff, Argentini in Medici, Exofficina Libraria, Bathaffis Piftoris, 1541. 29 × 19 cm. Letterpress in Latin.***

This consists of a set of ten double folio sheets labeled A-E and a-e. The left half of the first folio contains title, address to reader, place and date of printing. At the top of each subsequent folio is an anatomical description with letters which refer to the initials upon the plate itself. The right half of A shows the male viscera with lines and letters. The female figure is similarly shown on the left half of B. The next two cuts are the front and back view of the muscle man quite evidently adopted from Da Carpi, but without letters. On the right half of Folio C is shown the venous circulation, with numerous lines and initials, but without adequate accompanying text. The arterial system is shown in a similar way on the left of Folio D. The anterior view of the skeleton appears on the right of Folio D, and the side and back view on Folio E. In these three plates, the figures are lettered, but without accompanying text.

Folios a-e show the brain figures of Dryander (Figs. 1, 2 and 3), enlarged and reversed from the original, and there is added as decoration, cuts of various anatomical instruments. All of these figures are very much superior to the original Dryander figures.

VARIANT A: Same title, Paris, 1543. Letterpress in French. Plates same size; letterpress on both sides of each sheet and a few pages in addition. Two plates of the circulation which are not in the original. (British Museum.**)

VARIANT B: Same title, Paris, 1545. 44 pp. Letterpress in Latin. Same plates as in the original but in different sequence. The text extended and a portion printed on reverse of plates. (Dr. Harvey Cushing.**)

VARIANT C: Same title, Paris, 1545. Ten double sheets same size. Letterpress in French. The muscle men are from entirely different woodcuts; the other plates are the same. (College of Physicians, Philadelphia.**)

VARIANT D: *Des Allerfurtrefflochsten, hochsten und adelichsten gschoppffs aller Creaturen- das ist, des menschenwarfftige beschreibung oder Anatomi-erstmals inn Teutsche sprach verfasset-* Durch M. Gualtherum Hermeneium Ryff, Argentinum Medicum, 1541. Colophon; Strassburg, bey Bathassar Beck, Folio, 6–73, 11. Gothic type. (Choulant.)

This contains, including repetitions, twenty-five anatomic plates in woodcut; ten taken from Dryander, redrawn and enlarged; the other fifteen being full-page cuts of the skeleton, front, back and sides, drawn with a rather inferior understanding of anatomy; two muscle manikins, two reproductions of the blood-vessels of the whole body; one plate representing anatomic instruments, and fifteen smaller figures taken from the Rose Garden, showing the position of the fetus, and finally a schematic reproduction of the eye.

Type vii. Eight Copperplates:

Skeletons and muscle manikins, with the signature, Ph. Galle, *fecit ex exudit.* Probably these plates were used later in "Instructions et foundamens de bein pourtraire pour les pentres." Antwerp, 1589. (Choulant.)

Galle was born in 1537 and died in 1612.

Type viii. Fourteen Copperplates:

Muscle Manikins, Skeletons, etc. Guilio Bonasome. 4to. (Choulant.)

These plates contain artistic anatomy and were designed, drawn and engraved by Guilio Bonasome who lived in Bologna from 1520 to 1580. Each plate represents the muscle manikin, the fourteenth being a skeleton with the left side still covered with flesh. The representation of the muscles on the whole is good, but the skeleton is very badly drawn. The positions are varying, but always picturesque and lifelike. Some of the figures are holding in their hands a staff or rope, others, their flayed skin. The background of all the plates is crosshatched. Some have the monogram J. V. B.

CLASS THREE, ADAM AND EVE PLATES

Type i. Two Sheets:

Nicolai de Sabio viscerum viva delineatio. Venice, 1539. Folio.

Male and female with the abdominal viscera drawn on separate movable layers. The drawing is crude showing the liver with many lobes. (Choulant.)

Type ii. Two Sheets:

Anatomia oder abconterfectung eines Mans leib, wie er inwending gestalt ist. Gedruckt zu Nurenberg, durch Hans Guldenmundt. Folio (1539). Letterpress in German. (Weindler*—Choulant.)

Adam and Eve figures; man with twig in his right hand and apple in left. Woman has a flower in her left hand. Both nude and seated. Pre-Vesalian anatomy. The anterior wall of the trunk can be opened and turned upward. In the female figure, the uterus is shown enlarged and opened, with the cowering fetus with hand before the eyes. On the female figure are the names of the different organs; on the male figure, the letters only. Both figures show crosshatching. The drawing was probably done by the wood engraver, Peter Flotner, of Nuremberg, who died in 1546. Weindler gives the date as 1539. The sheet in his book is colored and has a small figure at the side, but it is defective as the fig leaf has been torn off. The sheet cited by Choulant was not colored.

Type iii. Two Sheets:

Title not cited. Folio. Copper with monogram c. b. (1539). A direct copy of the Guldenmundt sheets in copper probably by Cornelius Bosch (Bos), a copperplate engraver of the Nederlands who moved from Antwerp to Rome in 1540. These sheets were probably engraved before his departure (Figs. 4 and 5).

Choulant says: "I am unable to see from the copy before me whether text and illustration surround the main figure; the edges of my copy being cut close to the margin."

Both sheets are colored. (Choulant.)

VARIANT A: TWO SHEETS:

Anathomia oft deylinghe eins Mans lief, also si beinnen ghestelt is. Second sheet the same, except "*Voijfs.*" (Instead of *Mans.*) Folio, monogram c. b. in copper. N.D. Letterpress in Flemish. 40 × 39.5 cm.(***)

The male figure has the monogram c. b. at the lower right hand corner. At the end of the text surrounding the female figure are the initials, i. o. b.

This copy is uncolored. No accessory figures surrounding the main figure. On the male figure the various organs are lettered; these letters refer to the text which is printed in columns on either side and below the main figure. In the female figure, the names are engraved upon the organs, and the description is printed under a similar name in columns at the side only. There is of the female figure two sheets; one being merely the figure alone, and another a large flap which lifts up showing the organs printed directly upon the foundation sheet. The male figure is similar save that there is one large superimposed flap.

VARIANT B: TWO SHEETS:

The Anathomye of the inwarde Parts of Man lyvyely set fourthe and dylegently, and "The Woman." Folio. Letterpress in English. Black letter. Copper, (1550).

These sheets are possibly from the same c. b. plate, but unfortunately, they are defective just where the monogram shows in the original. There is no letterpress, but a very interesting border occupies the portion of the title in the original plates. There are several flaps on each figure which indicate that the date is probably about 1560. (Wellcome Historical Medical Museum.**)

Type iv. Two Sheets:

Anathomia, oder anconterfectung eines Mans leyb, wie er innwendig gestaltet ist . . . eines Weybs leyb, wie er innwendig gestaltet ist. Getruckt zu Strassburg durch Heinrichen Vogtherren, 1539, Folio. Letterpress in German. (Weindler*—Choulant.)

Man and woman, nude, sitting posture; some kind of garment thrown across the hips. Apple and flower lacking. Front wall of trunk can be folded upward. Different pictures of the various organs can be lifted up separately. Names of organs printed either in Latin or German. Crouching fetus in the uterus with hands at side of the head, but not covering the eyes. The drawing is more crude and the anatomy more obsolete than that of the Guldenmundt sheets. There are the same illustrations as on the Guldenmundt, but from a different wood engraver.

Two wood engravers and art dealers in Strasburg had the name, Heinrich Vogtherr. The older one was born in 1490 and the younger in 1513. These sheets are probably by the older man.

VARIANT A: TWO SHEETS:

Anatomia interiorum partium humani corporis ac earundem situs, figura, numerous, positio, haud, iniucunda cognitu- Anatomiæ perutilis interiorum mulierbris partium cognitio ac earundem . . . cognitio. Argentorati, apud Jacubum Jacundum, 1551-1552. Folio. Letterpress in Latin. (Choulant.)

Representation of man and woman. Latin text on back; smaller representation of the organs within.

Principal figure identical with those published in 1539 by Vogtherr in Strasburg. Plate of male figure, 1551, female figure, 1552. Both plates illuminated.

VARIANT B: TWO SHEETS:

Anathomia oder abconterfectung eines Mans leib, wie er inwendig gestaltet ist . . . eines weibs leib, wie er inwendig gestaltet ist. Getruckt zu Nurenberg, durch Hans Weygel, Formschneyder, 1556. Folio. Letterpress in German. (Choulant.)

Exact copies of the figures of Vogtherr, but different and inferior woodcuts. Internal anatomy also demonstrated in exactly the same way. The smaller woodcuts between the text that surrounds the main figure are the same drawings but re-engraved. Several of the wood blocks have been used before in Guldenmundt's book, "Ausslegung und beschreybung der Anatomi," Nurenberg, 1539. Both sheets are illuminated. Hans Weygel of Augsberg was a wood engraver and art dealer of Nuremberg. He died in 1590.

VARIANT C: TWO SHEETS:

Anatbomia oder abconterfectung eins Mans Lieb wie er inwendig gestaltet ist . . . eines weibs lieb, wie er inwendig gestaltet ist. Gedruckt zu Nurenberg, durch Matthes Rauch Brieffmaler, 1584. Folio. Letterpress in German. (Choulant.)

Woodcuts from the Weygel plate. Arrangement of the sheets the same. Female figure illuminated.

VARIANT D: TWO SHEETS:

Anatbomia oder abconterfectung eines Mans Leib, wie er inwendig gestaltet ist . . . eines weibs leib, wie er inwendig gestaltet ist. Gedruckt zu Frankfurt an Mayne, bey Conrad Corthoys. s.a. Folio. Letterpress in German. (Choulant.)

This drawing repeats the Vogtherr figure. The woodcut of the main figure and smaller woodcuts are new. All around the sheet runs a decorated border. Within the border is the explanation with smaller woodcuts on both sides of the male figure. The male figure is illuminated.

VARIANT E: TWO SHEETS:

Anatbomia, oder abconterfectung eines Manns Leib,wie er inwendig gestaltet ist . . . eines Weibs Leib, wie er inwendig gestaltet ist. Gedruckt zu Nurenberg, bey Georg. Lang Formschneider, 1588. Folio. Letterpress in German. (Choulant.)

This is also the Vogtherr figure. Plate made by Hans Weygel. The male figure is illuminated. Pre-Vesalian anatomy.

Georg. Lang Formschneider, woodcutter, and illustrator is supposed to have lived in Nuremberg and died about 1620.

VARIANT F: SINGLE SHEET:

Tabula Foeminæ Membra Demonstrans. Viitberg, Simonis Groneberg, 1589. Folio. 40 × 29.5 cm. Letterpress in Latin. The figure itself which occupies the upper left hand corner is 32 × 18 cm.(***)

The arrangement of the accessory figures is much the same; those below the figure are practically identical. The newborn babe still sits on the bench to the right of the main figure. Above, however, there are two accessory figures instead of one as in the original Vogtherr plate. On the left, a cut of the stomach replaces the original figure of the female genitalia, and to the right is a crude cut of the posterior wall of the stomach in contact with the spleen. The figure is illuminated. This is probably the Eve of the Vogtherr Adam and Eve set.

VARIANT G: SINGLE SHEET:

Anatbomia oder abconterfectung eines Manns Leib wie er inwendig gestalt ist. Nurenberg, Georg. Lang, 1594 (Fig. 6) 54.5 × 29.5 cm. Letterpress in German. Folio.(***)

Made up of two sheets pasted together, printed in part in colors; the balance illuminated. The main figure occupies the lower center of the sheet; several superimposed flaps of which only two remain. The main figure is surrounded by eight labeled but not numbered smaller figures with the Latin name. The text is in three columns. A very interesting feature of this particular sheet is that the head and abdominal flap are printed from the same sheet and pasted over the fundamental sheet upon which is printed the outline of the body.

The male figure of the Adam and Eve set is now very rare. There is one in the Surgeon General's Library, which, unfortunately, is so defective that it shows neither date nor place of printing.

VARIANT H: SINGLE SHEET:

Same Title. Folio. The female figure alone. Viiteberg, Johannis Germans, 1625, 43 × 32 cm. Letter-press in Latin; text in columns to right and left. (de Lint.**)

This sheet is of extraordinary interest inasmuch as it extends the history of the Vogtherr series thirty-five years after the latest example cited by Choulant. This particular sheet seems to be a galley proof; another proof with letterpress alone has been drawn on the reverse of the sheet.

TYPE V. SINGLE SHEET:

Anatomie tres-vtile, pour coggnoistre les partes interieres de l'bomme et de la femme. Composee par Maistre Andre' Vesali, ausc ample declaratione des veynes principales et manier de beine Signer. Paris, apud Jean de Bourmont, 1585. Folio; letterpress in French. (Choulant.)

At the top in the center of the sheet is a cut representing a tiled bathroom. Above, a small window through which one sees the landscape. In the room sits a nude man on a wooden bench and at his left sits a nude woman. Both have a narrow garment fastened at the hips. The woman's garment covers the right forearm. The man is holding in his left hand a water basin. The woman has in her hand a small tablet on which are inscribed the words: "Nosce te ipsium."

The veins of the arms and feet are drawn only on the male figure and marked with letters. The anterior wall of the trunk can be turned up showing the anatomy which is pre-Vesalian. On the footrest of the bench we find the initials, R.S. and below a dissecting knife.

Above the male figure are the words "Interiorum Corporis Humani Partium Viva delineatio." And above the female figure the words "Pertuilis Anatomes Interiorum mulierbriis partium cognitio." On both sides of the plate are anatomic explanations and below the whole width of the plate is taken up with directions for venesection and the names of the veins involved. The woodcut is illuminated in colors. The name Vesalius on the title-page is a misnomer as the anatomy is distinctly pre-Vesalian and poor pre-Vesalian anatomy at that.

VARIANT A: Same title. Letterpress in French, 1613. Folio.

A second edition was printed in Paris by Michel de Mathonière, 1613.

TYPE VI. SINGLE SHEET:

Viscerum boc est interiorum corporis bumani partium descriptio. N.D. (Choulant.)

An oblong folio sheet consisting of several prints pasted together. The two central sheets show in one a nude man seated and in the other a nude woman seated. Each figure has six or seven flaps which are cut out and fastened one on top of the other, in such a way as to be folded aside, giving a view of the internal organs. All the parts are marked with letters, except those of the female genitalia which are marked by numbers. To the left of the man is a shield with the words: "Antwerpiæ, apud Sylvestrum Parisium, Typographium." Both figures are well drawn and well engraved. Sylvester de Paris was a form cutter and printed epistles in Antwerp during the first half of the sixteenth century.

CLASS FOUR. THE FEMALE FIGURE ALONE

TYPE I. TWO SHEETS:

Tabulæ de Matrice Mulierum et Impregnatione (1520). Double folio sheet; on the left folio the figure; the right, the text in Latin. 27 × 36 cm.(***)

A hitherto undescribed gynecological, anatomical plate, probably unique. There is represented with coarse woodcut technique a squatting figure of a woman with the abdomen laid open showing the genitalia. On the lower side margins in Latin type are initial letters which direct attention to the separate parts of the body which are also used for the explanation on the accompanying leaf. This is, of course, a direct copy of the Ketam figure and probably an enlargement of the same woodcut figure which was used in "Eyn Gert Artzney die hoc noch steet," 1525 (Fig. 7).

While this plate is definitely derived from the celebrated Ketam illustration, it is impossible to determine whether it antedated or succeeded the illustration in the book quoted above which was published in 1525. The dealers gave the date about 1520, but I am inclined to place it about 1530.

TYPE II. SINGLE SHEET:

Anatbomia oder abconterfectung eines Weybsleyb, wie er inwendig gestaltet ist. Jobst de Negker, Augusburg, 1538. Letterpress in Latin. (Weindler.*)

This sheet has been studied by Wickerscheimer.[2]

Weindler printed a copy of this plate which was in the Klein collection, now transferred to the Library at Louvain. Both authors agree that no companion plate is known, so it must be considered in this classification. At any rate, it is probably the precursor of the Vogtherr Eve and may even indeed be a part of the first Adam and Eve set.

TYPE III. SINGLE SHEET:

Pertutilis Anatomes Interierum Muileris Partium Cogniti, ac earnndem sitis figura, numerus Positio bvd iniuçunda Cognitu, Paris, Jean Roulle, 1540. Letterpress in Latin. 43 × 32 cm. (Schwarz.)

This plate has just been described in the catalog of Dr. Ignaz Schwarz, Vienna. It shows the female figure seated, with the thoracic abdominal cavities open, and the individual organs represented by superimposed flaps.

TYPE IV. SINGLE SHEET:

Annotozione Anatomica: Cioè Spiritale, et Naturale con le parti della generatione della donna, Venetia, 1611. Letterpress in Italian (*Frontispiece*). The sheet itself measures 40 × 29 cm. The figure alone 32 × 18 cm.(***)

This sheet represents a woman seated with a drapery thrown over the knees and the right hand resting upon a beautiful vase. It is probably a foundation sheet upon which have been superimposed flaps, but there is no evidence that flaps were ever used upon this particular sheet. The letterpress is in Italian; on the left hand there is a decorated initial letter with Latin type, and on the right hand a historiated initial letter and Latin type. Surrounding the whole a beautiful decorative border. This particular sheet has not been described as far as I am able to determine.

TYPE V. SINGLE SHEET:

Venetia, 1683. The entire sheet measures 56.5 × 45 cm. Figure alone, 33 × 19.5 cm. Letterpress in Italian (Fig. 8). (St. Mark's Library, Venice.**)

On the inside of the back cover of the famous Tabulae in St. Mark's Library, Venice, is pasted a fugitive sheet with the above title. The entire sheet has dimensions given above, and it is a definite copy of the female figure of Remmelin, but as so frequently happens in copies, the figures are reversed as to right and left. The left foot of the female reposes upon a pedestal in this sheet, whereas in the original Remmelin, the right foot reposes upon a skull. The snake is first brought to the attention in the edition of Geminus, 1545. The apple must always be present, so in the Remmelin figure, it is in the snake's mouth. There are two subsidiary figures in this sheet. These figures are to be seen in Remmelin. There are six columns of letterpress with the frequent use of italics. The whole surrounded by a decorative border.

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[2] *Bulletin de la Societe Française d' Histoire de la Médecine,* April, 1921.

CLASS FIVE. THE MALE FIGURE ALONE

SINGLE SHEET:

Tabula Exbibens Insigniora, Maris Viscera. Viitebergæ, Barth. Schonbornio. N.D. The sheet is 42 × 32.5 cm. The figure in the upper left hand corner is 18 × 32.5 cm. surrounded by a black border. A decorative woodcut border surrounds the entire sheet. Letterpress in Latin with many words and phrases in Greek. (***)

The main figure has the features of Vesalius; the hair line is continuous with the beard and the upper lip is covered with a mustache (Figs. 9 and 10). A cloth printed in yellow covers the thighs. There are ten figures designated by the letters A to H surrounding the main figure. There are three superimposed flaps.

VARIANT A: Same title. (de Lint.**)

Dr. de Lint gives this sheet as printed at Viiteberg, edited by D. Barth. Schonbornio, about 1590. In this particular plate, the hair line is quite like that of the portrait of Vesalius in the Fabrica. The beard, however, does not go in front of the ears and the upper lip is bare.

WILLIAM HEWSON, F. R. S.*

(1739—1774)

AN ACCOUNT OF HIS LIFE AND WORK

By GARLAND HOWARD BAILEY, M.D.

BOSTON, MASS.

THE eighteenth century has been called the age of theories and systems. The works of Shakespeare or Molière, Spinoza or Newton, Harvey or van Leeuwenhoek, were either the result of original inspiration or wonderment over the newly revealed marvels of nature. Everything tended toward formalism and every theory, however idealistic, grew into a rational, methodistic system. Such were the systems or theories of Kant and Rousseau, Voltaire and Hume, Linnaeus and Buffon. Even in medicine, aside from a few original spirits like Morgagni, Hales, the Hunters, Wolff, and Jenner, it was essentially an age of system-makers and theorists. Linnaeus had laid down ironclad rules of classification in medicine as well as in natural history, and set the pace which was almost universally followed. But the sacrifices of the heroes and martyrs of the preceding century had borne rich fruit in science as well as a great gain for spiritual and intellectual freedom. The American, as well as the French Revolution was to make men everywhere less content with the old order of things and lay the foundation for intellectual, as well as, political rebirth. Medicine was also to experience such a rebirth. A few of those physicians and men of science who lived during the latter part of the century were as Emerson described the gods, each sitting aside in his own sphere, "beckoning up to their thrones." Such systematists as Albrecht von Haller, Stephen Hales, Réaumur, Friedrich Wolff, and Spallanzani, were already establishing the new order in physiology and paving the way for the development, almost a century later, of modern microbiology. In England anatomic study had received a mighty impulse from the brothers Hunter, and the name of William Hunter is inseparably connected with the advancement of obstetrics. With the advent of John Hunter, surgery ceased to be regarded as a mere technical mode of treatment and took its place as a branch of scientific medicine, firmly grounded in physiology and pathology.

At this period, surrounded and influenced by men such as the Hunters, master-teachers of anatomy and surgery in their time, perhaps in all time, William Hewson

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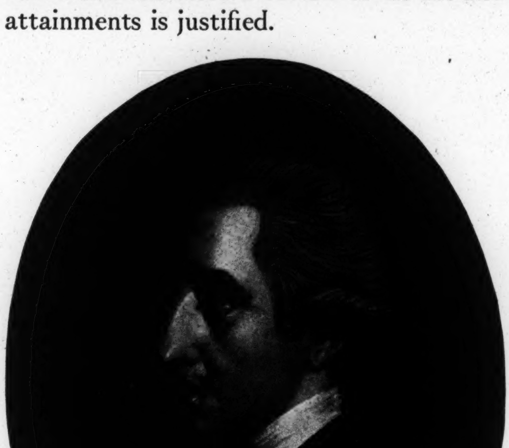
* Read before the Wisconsin Medical History Seminar, April 26, 1922.

NOTE.—Grateful acknowledgment is made for the assistance received from Drs. William Snow Miller and Addinell Hewson, Jr. in the preparation of this biographic sketch.

came, their worthy pupil and associate. Rarely did one man combine in a short lifetime, the qualities and attainments of an anatomist and physiologist of the highest rank better than he did. Although his work was for long forgotten, it has now come to the front on account of its intrinsic importance and therefore a review of his life and attainments is justified.



William Hewson, F. R. S.
(1739–1774)

For the little that is known of the private life of William Hewson, we are indebted to his widow who left a manuscript memoir of him which her son, Dr. Thomas Tickell Hewson, sent with a letter dated October 28, 1804, from Philadelphia, to Dr. John Coakley Lettsom, a distinguished practitioner in London.

From this we learn that William Hewson, one of a family of eleven children, was born November 14, 1739 (O. S.) at Hexham, Northumberland, where his father, William Hewson, had resided many years, and died at his home in London, May 1, 1774, after a short illness in the thirty-fifth year of his age. It seems that the father must have been a man of considerable ability and influence for he had a reputation as a surgeon and apothecary, and was much respected in the neighborhood. Mary, the mother, whose maiden name was Heron, was also a native of Hexham, and allied to several respectable families in that town. With eleven children in the family, and a very limited fortune, the parents could not educate their children in any extraordinary way, so that the advancement of their son, William, was largely due to his own industry. He received the rudiments of his training at the grammar school in Hexham under a Rev. Mr. Brown, and later as an apprentice to his father, Hewson acquired his first medical knowledge. That he was a hard-working, ambitious student and at a very early age eager to study medicine is apparent from the fact that he quickly took advantage of the opportunity to place himself under a Mr. Lambert, an eminent surgeon at Newcastle. Even in his early years Hewson had gained the reputation for close application to any work which he might have in hand. This was one of the outstanding characteristics of his life.

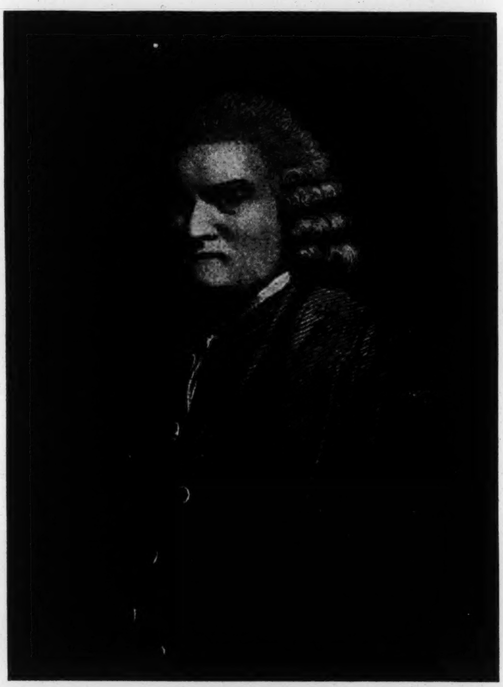
Already the fame of the Hunters as teachers had spread to all parts of the world and Hewson was attracted to London, and went there in the autumn of 1759 at the age of twenty. He lodged with John Hunter and attended the lectures in anatomy and surgery given by William Hunter at a house in Covent Garden. It appears that the lectures on the operations of surgery were primarily given for the benefit of a society of navy surgeons, and through their invitation, a course was also held in anatomy. At any rate it was only a short time before Hewson by his diligence and skill had attracted the attention of both John and William Hunter and an opportunity soon presented itself whereby the young man would have charge of instructing the other pupils in the dissecting room. This responsibility came when John Hunter went abroad with the army in 1760. The younger Hunter had held the position of first assistant to his brother, William, since 1754. The work consisted in preparing demonstrations for the classes and the museum and assisting at the lectures. A rare opportunity was thus offered Hewson to acquire a solid foundation in both human and comparative anatomy and at the same time "gain money at an age when most students were only spending it."

Desirous of becoming well acquainted with the clinical side of medicine, Hewson lost no time in enrolling himself as a pupil at Guy's and St. Thomas' hospitals. Here he attended Dr. Colin M'kenzie's lectures on midwifery and Dr. Smith's on "physick." A large sum of money was of course necessary to pay his various fees, but contrary to the suspicions which some fathers might have shown regarding the financial extravagances of their sons in such a city as London, we hear quite a different story of him.

By this time Hewson had won the admiration of William Hunter to such an extent that Hunter made a new proposal to him. For want of proper assistance due to the absence of his brother, John, Dr. Hunter discontinued his courses, but knowing well the advantages of giving lectures to supplement the work in the dissecting room, he made a proposal to Hewson of taking him into partnership if he would study one year in Edinburgh. This proposal was very agreeable to Hewson and, to one with his ambitions, was not to be rejected. Gaining the consent of his father, Hewson made preparations and was shortly in Edinburgh attending the lectures of the celebrated Alexander Monro, secundus, with whom he later came into controversy over a number of discoveries. Suffice it to say Monro was one of the most profound anatomists of his time and it was considered a great privilege to have studied under him. That Hewson carried with him to Edinburgh a high reputation as a student and already ripe scholar is shown by the fact that he had letters of recommendation not only from William Hunter, but also from Sir John Pringle, one of the great pioneers in sanitation in England, and one of the best known members of the Royal Society. It is well known that Sir John was by no means indiscriminate in showing favors, and the friendly attitude of a man of so much influence, not only in scientific circles at home and abroad but also among the common people due to his humanitarian accomplishments in the bettering of the conditions in prisons, jails, and other institutions, must have been a great advantage to Hewson.

William Hunter
(1718–1783)

At Edinburgh Hewson applied himself with much diligence to every branch of science, and of course especially to anatomy. As in London, so in Edinburgh, anatomy was taught mostly by didactic lectures and demonstrations on the cadavers. The influence of Monro, secundus, was felt far and wide in anatomic circles at the time and Hewson here came in contact not only with a great teacher but also enjoyed the stimulating influence of many of his fellow-students who like himself were to become leaders in their chosen field of medical science. As there were few adequate textbooks of anatomy at this time, the students relied mostly on their notes and in most cases these were carefully taken down. It seems, however, that this was not always the case with Hewson, who perhaps had less respect for this method of learning anatomy, and who had already shown signs of being able to form opinions of his own on many of the disputed questions. At any rate such notes would have saved him considerable trouble and embarrassment later when his former teacher accused him of appropriating to himself some of the ideas which had been presented to him while Hewson was his student. We shall perhaps have occasion later to refer to these most unpleasant incidents in Hewson's career.



Sir John Pringle
(1707–1782)

Hewson resided in Edinburgh until the autumn of 1762, at which time he returned to London and entered into partnership with William Hunter. He was given a share in the profits, and was allowed also to give some of the lectures. The anatomical school was established in Litchfield Street, where Hewson and the pupils who boarded with him lived. Thus settled Hewson gave himself up almost entirely to the teaching and study of anatomy. Early in his career it had been the wish of his father that the son should settle down in practice near him at Hexham. However, now all thoughts of fulfilling his father's desire, were given up because of the greater prospects which were opened up to him through his connection with Dr. Hunter.

At that time, as at present, anatomy was rarely studied during the summer months, and Hewson was free to spend his time as he wished. It was still his desire to cultivate the clinical side of his education and he decided upon a trip to the Continent. In the summer of 1765 he went to France where he visited all the places of note; and returning through Flanders and Holland arrived in London before the commencement of the anatomical lectures. He continued his partnership with Hunter upon the same terms.

In the summer of 1767 Hewson paid a visit to his father who was then in a declining state of health. The sight of his son already in flourishing circumstances and likely to be one day at the head of his profession, must have acted as a great stimulus to his drooping spirits. The father, however, survived only until the following November leaving a widow, three daughters, and the son who were all that remained of the eleven children. Hewson, through all his prosperity was loyal to his mother and sisters and made frequent visits to Hexham and gave generously of his income for their support.

In "The Works of William Hewson, F. R. S., Edited with an Introduction and Notes by George Gulliver," and published for The Sydenham Society, 1846, there is a picture of Hewson. It was reproduced from a mezzotint, and considered the same as that spoken of by Benjamin Franklin in a letter which he wrote to Mrs. Hewson from Passy, France, June, 1782: "I forget whether I ever acknowledged the receipt of the prints of Mr. Hewson. I have one of them framed in my study. I think it is very like." A pen picture is also given of him by Mrs. Hewson. She describes him as "slender in form, above the middle stature; with a good air and a pleasing countenance, expressive of the gentleness and sagacity of his mind."

In an obituary notice of Hewson, there occurs the following statement:[1] "On Sunday, May 1st, died at London, Mr. William Hewson, fellow of the Royal Society, and teacher of anatomy. From those ingenious publications with which he has already favored the public, his untimely death will be regretted by every sincere lover of science."

In our review of the life and works of Hewson we shall see that the contributions for which he is best known and for which he has the greatest right for fame are in the field of pure science. He was primarily an anatomist and physiologist, and as such deserves our admiration. Closely associated with the Hunters, with Sir John Pringle, and other medical men, possessed both of extensive practices and wide influence, we should believe that Hewson would have had many opportunities to engage in the healing art itself. We have already seen his interest in clinical medicine and surgery and his eagerness to improve his technique and gain experience from his first lessons as an apprentice to his father in Hexham up to the time of his travels on the Continent. We should not be surprised then that his first contribution should be of a practical nature. It is entitled, "The Operation of Paracentesis Thoracis, proposed for air in the Chest, with some Remarks on the Emphysema, and on Wounds of the Lungs in General." The essay was written in 1766–67 and was communicated to a society of physicians in London by the sponsor, William Hunter. The paper was later published in the famous *Medical Observations and Inquiries.*[2] The publication of this essay was followed by a sharp contest between Hewson and the distinguished Monro, secundus, professor of anatomy in the University of Edinburgh. As mentioned the essay related to an improvement in surgery, namely the operation of paracentesis thoracis for pneumothorax or to let the air out of the chest in emphysema caused by a puncture from a fractured rib, or other wounds in which the lung is punctured through the pleura.

In arriving at his conclusions, Hewson was far in advance of many of his contemporaries; for he saw what was later to be emphasized by Rokitansky and Virchow, the great importance of pathological anatomy; that a careful dissection should confirm and add to our knowledge of disease, and may be the soil from which will spring important methods of medical and surgical treatment. In illustration of what we have already quoted Hewson relates cases from M. Littré, M. Mery, Dr. Hunter, and Mr. Cheston. In three of these cases the patients died, and it seemed to Hewson that the air confined in the chest was the principal cause of the symptoms, the difficulty of breathing and the sense of suffocation. As these symptoms were similar to hydrops pectoris and emphysema, both of which are relieved by paracentesis, he argued that a like mode of treatment might be efficacious in case of the confinement of air in the pleural cavity. He planned a series of experiments on animals which supported his views. So well carried out were these researches which were added to by clinical observation that he was able to recommend the best places for the performance of the operation and the technique to be employed. Suffice it to say later improvements have added little to Hewson's suggestions.

The publication of the above mentioned contribution was quickly followed by the dispute between Hewson and Alexander Monro, secundus, which has already been referred to. In the winter of 1761 Hewson had attended Professor Monro's classes in Edinburgh, and the latter now accused Hewson of having advanced views which had been put forward by him in his lectures, and so accused his former student of plagiarism. As was mentioned previously, Hewson apparently had not taken notes of the lectures, but lost no time in making inquiries of some of the former students who had done so. Monro seems to have been very bitter in his terms of impeachment and the challenge was not left unanswered by Hewson, who, in his reply which has been published in full, says:

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[1] *Medical and Philosophical Commentaries,* Vol. II.

[2] Vol. III, pp. 372–396.

> About the middle of last summer I was told by a gentleman from Edinburgh of your manner of treating me, at which time I was a little surprised, as I was not conscious of having given you the least cause of complaint. But having since learned from other gentlemen who had attended your lectures before the time of publishing that paper (and who at my request, consulted their notes) that you had mentioned it, I cannot now doubt that you had made the observation before me. At the same time I must assure you, that to suppose that I knew it at the time of publishing that paper was doing me an injustice.

Hewson goes on further to state that Monro was not the only one who had anticipated him in his observations, but these publications had not come to his attention and he was ignorant of the fact when he set forth his own views on the subject. He also replied by saying that any unprejudiced person would be convinced of his ignorance of Monro's claims, for in a paper which he had read before a private society of physicians he had given an account of his investigations and conclusions, and although many of these men had attended Professor Monro's lectures in anatomy, all expressed themselves pleased with the observation, as new and interesting and not one of them gave the least intimation of their having even heard it before; and considering the importance of the subject to medical men they would certainly have been the most likely group to remember such an improvement. In conclusion Hewson says: "When you complained of me, 'tis a pity you had not likewise hinted there was a possibility of my being ignorant of your having had the idea—I might possibly be capable of such an exertion of candour as to acknowledge it—and though I may be as covetous of fame as most people, yet I am incapable of taking any unjustifiable methods of acquiring it." Monro, only half pleased when he declared himself "sufficiently satisfied at having secured his title, as the first who proposed that improvement," gave a rather petty version of the whole affair and hinted there was a plagiarism after all, because a knife rather than a trocar had been recommended by Hewson for the performance of the operation, insinuating that the suggestion of a knife was a pretense at originality. For a while the controversy ended between the two men, but it was not really settled.

The summer of 1768 Hewson spent at the seacoast of Sussex making experiments upon fish which led to the discovery of the lymphatic system in those animals. The following winter his "Account of the Lymphatic System in Birds, Fish, and Turtles" was laid before the Royal Society when he was made a member of that body. The date of his election was March 8, 1770. To his recommendatory certificate, read December 7, 1769, eleven signatures were affixed, among these were the names of Sir John Pringle, William Hunter, Benjamin Franklin, M. Maty, J. Turton, and James Ferguson. Not only was Hewson signally honored by being received among the ranks of the Fellows of the Royal Society at the early age of thirty years, but he was at the same time honored by having the prize medal of the Society awarded him. This was the Copley medal, originating from a bequest of Sir Godfrey Copley in 1709, by which a sum of "one hundred pounds, entrusted to the Royal Society of London for improving natural knowledge, to be laid out in experiments or otherwise, for the benefit thereof, as they shall direct and appoint." It is interesting and gratifying to know that the first award was made to Benjamin Franklin.

Hewson's discovery of the existence of lacteal and lymphatic vessels in birds, reptiles, and fishes, was considered of great importance in its day, because the two Hunters maintained that absorption is an exclusive function performed by the lymphatics, against which it was objected that there are animals which have neither lacteals nor lymphatics. Magendie's demonstration that the blood-vessels have an absorbent function, of course threw this phase of Hewson's work into the background, but his experimental methods and technique were almost ideal, even if his conclusions were hardly justified and somewhat immature.

It is a curious fact that before Hewson's time, it was a popular opinion that the lacteals begin by open mouths in the villi of the intestines, and this view was generally held up to the time of the work of Müller in 1838. Sheldon after stating that these mouths were discovered by Lieberkühn, declared that "the ampullulae, with their orifices, are to be considered as the beginnings of the lacteal vessels." Cruikshank figured what he conceived to be these orifices, Müller, however, found that mercury injected into the lacteals does not escape from the surface of the mucous membrane of the intestines and therefore concluded that the villi are not perforated at their extremities. It was later shown, of course, that the radical extremities of the lacteals form loops or closed passages in the villi. When the lymphatic vessels were first seen and traced into the thoracic duct it was natural, as Hewson tells us, for anatomists to suspect as lacteals opened into the intestines to absorb, so the lymphatic vessels which are branches of the same system, might possibly do the same office for other parts of the body. This view was held by Glisson as early as 1654 and later by Friedrich Hoffmann, who laid down the doctrine that the lymphatic vessels are a system of absorbents. Later anatomists, however, took a contrary view and by experimental injections concluded that they do not arise from cavities, and do not absorb, but are merely continued from small arteries. This was controverted by both Monro and the Hunters who maintained that the lymphatics are a strictly independent system and are strictly absorbents.

Thus stimulated, Hewson considered that before it was proved that the lymphatic vessels are absorbents it must be tried out in other animals. Again he turned to that fruitful field of inquiry which has led to so many triumphs in physiology, animal experimentation. Whether he was opposed in his day by antivivisectionists we are not told, but no doubt he himself had his tilts with them. At any rate he continued his researches on the lymphatic system and its contents uninterruptedly until 1774, when with new material it culminated in a treatise of experimental inquiries containing "A Description of the Lymphatic System in the Human Subject and in other Animals Illustrated with Plates. Together with observations on the Lymph, and the Changes which it undergoes in some Diseases." It is interesting to note that the second part of these inquiries was dedicated to Benjamin Franklin to whom its author was indebted for many acts of kindness and attention. We shall have occasion later to mention other incidents of the friendship of Hewson and Franklin.

The works on the lymphatic system deserve study up to the present day not only for their intrinsic value, but especially as splendid examples of the experimental method of physiological and anatomical inquiry, and for the simple and forcible style in which such treatises should be written and of which Hewson was a master.

Hewson thought that the orifices which he believed had been demonstrated in the villi were made patent during digestion by the turgescent action of the blood capillaries, and that absorption of the chyle was brought about by the same force which causes liquids to flow along capillary tubes. He also explains the absorption of fluids from such membranes as the pleura and peritoneum by a similar ingenious hypothesis, that is, that these surfaces instead of having villi may have a network of blood-vessels surrounding the absorbing pores forming a sort of "reticulation, which, by its turgescency, may make the pores stand rigidly open as those we have observed upon the villi." Such a mechanism would not be so efficient as in the case of the villi and hence a disturbance of functions with consequent dropsies might occur. As to the grosser anatomy of the lymphatic system, Hewson was very well informed and did numerous dissections which contributed much to the solution of both normal and pathological conditions. His works contain plates for illustrations which remain in some respects unsurpassed. Although he had been accused of superficiality and plagiarism by the second Monro, a perusal of his writings will show his depth of knowledge of the contributions which others had made before him. This is well shown in his treatise on the lymphatic system in which just tribute and credit are given to Harvey, to Asellius, Rudbeck, Jolyff, Hunter, Monro, and others.

Although Hewson probably would have changed some of his ideas on the lymphatic system in his more mature years, still he must receive the credit of clearly showing that the lymphatic vessels are absorbent vessels; that the lacteals and lymphatics form part of the same system, and that the fluid contained in this system is a coagulable fluid serving purposes in the animal economy. Previous to Hewson it was thought that the fluid found in serous cavities was condensed vapor or steam due to the temperature of the evaporation of the body, and on this point he did not differ from his contemporaries. He showed that all the fluids are coagulable except in the ventricles of the brain, and that this coagulable lymph is the same as that found in the lymphatics. Hewson also showed the progress of the absorption of poisonous substances by and through the lymphatics. Thus he showed that the red lines leading from wounds are due to inflammation of the lymphatics. He described the progress of a disease like cancer which metastasizes to various lymph glands. He truly assigned to the lymphatic vessels the function of absorbents for the cellular tissues just as the lacteals were known to absorb and transmit the chyle to the thoracic duct. Although he was not the first to describe the thoracic duct as the main drainage trunk for the lymphatics and lacteals, still he was the first to unify and explain the main branches, divisions, and course of the lymphatic system of the whole organism. As to the chaotic and fragmentary knowledge existing concerning this important system before the work of Hewson, and the light which his labors must have thrown upon the subject, we may judge from a single illustration which is taken from his essay:

> At the root of the lungs where the large blood vessels enter, are many glands called bronchial; they are generally of a blackish color in the human subject, and have been suspected to secrete the mucus which is spit up from the trachea; but I have more than once distinctly filled them with mercury by injecting the lymphatic vessels of the lungs, and therefore it is evident that they are not mucous but lymphatic glands.

The animosity already existing between Hewson and Professor Monro of Edinburgh seems now to have reached an acute stage when the latter again accused Hewson of failing to give him credit for priority in the discoveries relating to the lymphatic system. Shortly after Hewson's paper on the lacteals and lymphatics in birds, fish, and amphibious animals was laid before the Royal Society, Professor Monro had been informed by his brother, Dr. Donald Monro, that Hewson had made these discoveries. In a letter to his brother dated January 19, 1769, which was made public and a part of which was read before the Royal Society, Monro made the following claim:

> About four years ago I injected the lacteal vessels of a turtle, or sea-tortoise, with quicksilver, after injecting the artery and vein with

wax, and have shown this instance of the vessels in oviparous animals every year in my college, and had a drawing made of it two years ago. I, likewise, eight years ago, mentioned those vessels in fowls and fishes, which I had seen, but not injected.

These claims were again met by Hewson in a series of letters and controversies laid before the Royal Society which are of such an acrimonious tone that they form some very interesting reading. Hewson's attitude and manner of vindication of his rights, however, in all cases seem commendable, and by numerous proofs show that Monro had little or no right whatever to these discoveries. In a somewhat sarcastic tone he asks why if Monro had anticipated him, he had not sent a description of his discoveries to the Royal Society instead of only his testimony. He goes on to say that the Professor had, by his own confession, said he had not injected these vessels which he certainly should have done in order to complete the discovery, especially as this was considered one of the most important subjects of the day. He quotes from the works of Monro and from the notes of many of his former students to the effect "that after a considerable number of experiments which he had made, he was convinced that neither birds, fishes nor oviparous animals in general, had either lacteals or lymphatic vessels." In all the correspondence which had taken place between the two authors Hewson's letters were courteous and somewhat conciliatory but were only met by rebukes and evasive replies. Finally growing impatient of Monro's persistence, in the Appendix to his work on the lymphatic system in animals, he wrote in a spirited manner:

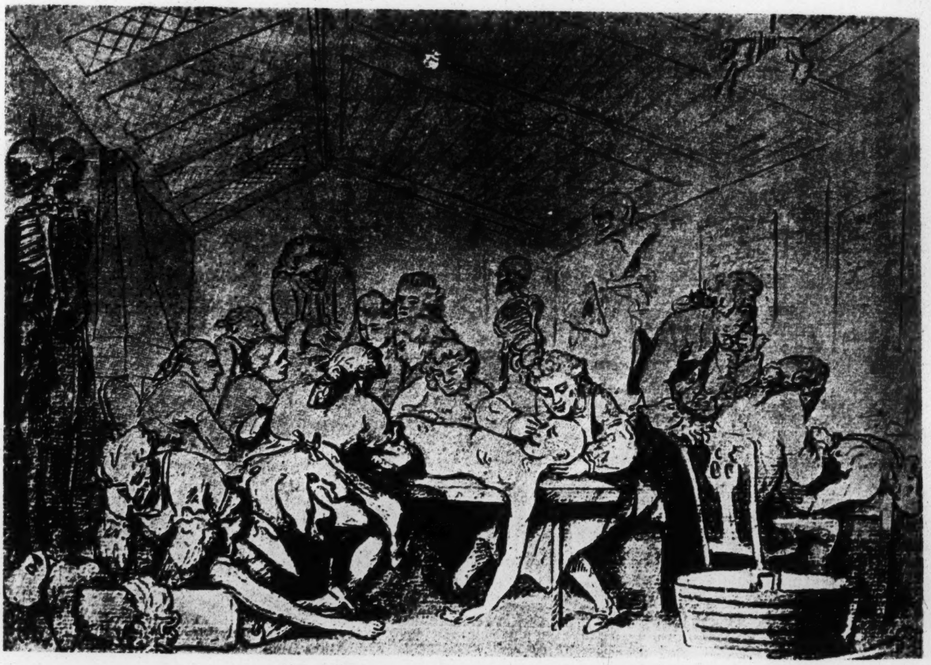
> Now, when it is considered that Dr. Monro obliged me to act in the manner I have done, in order to secure my right . . . I shall therefore only add that the proofs on which my conclusions were founded being now laid before the public, to their judgment I willingly submit them, and that, with respect to Dr. Monro, I have nothing more to say, than that I hope, for his sake as well as my own, to see no more of his claims, his assertions, and his conclusions.

This reply, however, did not entirely put an end to Monro's claims, for he published a rejoinder in his work on the "Structure and Physiology of Fishes," eleven years after Hewson's death. However, the question as to the absorbent function of the lymphatics long ago lost most of its interest, especially since the discovery of Magendie that the blood-vessels also have a similar rôle. The main point of contention between Monro and Hewson, that is, the honor of the first discovery of the lacteal vessels in oviparous animals, does not appear strictly to belong to either, for the lacteals of a fish were observed more than a century before by Bartholin, though he thought they terminated in the liver. However, whatever may be thought at present as to the question of discovery it must be said that the lymphatic system in the lower vertebrate animals as well as in man, was more completely demonstrated by Hewson than by any of his predecessors or contemporaries. That Hewson received due credit for his work is proven by the fact that he was made a member of the Royal Society and as before mentioned, and awarded the Copley medal.

In 1769 William Hunter finished a building in Windmill Street where Hewson had a small apartment allotted to him. They continued delivering their lectures as partners, dividing the profits equally, Hewson giving more than he had formerly done. Though he did not seek much practice in surgery and midwifery, it is said his manners were so engaging and he showed so much skill, that his profits from his practice must have been considerable. The old Windmill Street School no longer exists, but it will be kept alive for posterity by the names of the eminent men who lectured there, some of these being William Hunter, Hewson, Cruikshank, Sheldon, Baillie, Brodie, and Charles Bell. The site of the old school is now occupied by the Lyric Theater. In the "Diary of a Resurrectionist" by

J. B. Bailey there is an interesting caricature by Rowlandson of a group of these famous men in the dissecting room. It includes John and William Hunter, Cruikshank, Baillie, and Hewson.

We have already spoken of the close friendship which existed between Hewson and Benjamin Franklin. The latter had not only distinguished himself at the Court of England, but was also well known in scientific circles by his numerous contributions and versatility. He had long been a member of the Royal Society and one of the first recipients of the Copley Medal, and he was one of the number who had recommended these honors for Hewson. It is very interesting also to note that it was probably through Franklin that Hewson met his future wife. During his fifteen years of residence in London Franklin had lived at the boarding house of a Mrs. Margaret Stevenson in 7 Craven Street, near the Strand. For Mrs. Stevenson and her daughter, Miss Mary Stevenson, who at that time was eighteen years old he formed a strong attachment which continued through life. His first acquaintance with them was accidental, having been recommended to her house by some Pennsylvania friends who had boarded there. The daughter was a girl of excellent sense and of a highly cultivated mind and some of Franklin's best letters on philosophical and other subjects were written to her. Suffice it to say that Franklin had earnestly desired his son to marry Miss Stevenson. William, however, had already become too much interested in another, and was at that time affianced to her. The tone of a letter written to Miss Stevenson from Portsmouth, August 11, 1762, showed it was a bitter disappointment to the father, and no doubt a misfortune for the son.



"The Dissecting Room" by Rowlandson.

The figure standing up above the rest is William Hunter; his brother, John, is on his right-hand side, and Matthew Baillie is the next figure to William Hunter on the left; Cruikshank is seated at the extreme left of the picture and Hewson is working on the eye of the subject on the middle table. (From "The Diary of a Resurrectionist" by James Blake Bailey, 1811–12, London, 1896).

Hewson became acquainted with Miss Stevenson in 1768 and they were married in 1770. They took a house near Dr. Hunter with whom he continued the lectures during the winter of 1771. When Hewson married, Hunter, who seems to have had a natural aversion to Benedicts, abruptly broke off the partnership, much to Hewson's pecuniary disadvantage. He soon retrieved himself, however, and began to lecture on his own account, September 30, 1772, in Craven Street, where he had built a lecture hall adjoining a house which he intended for the future residence of his family. It appears that there had been an agreement between Hunter and Hewson to the effect that the latter should be allowed during the partnership to make anatomical preparations which could be used to advantage if he should wish to build up a school of his own. Upon their separation, however, Hunter at first refused to allow Hewson to take his preparations along with him, much to the latter's chagrin. It is interesting to note that Hunter later changed his mind and very cleverly made use of Franklin as a common friend to settle the grievance which Hewson held against him. It appears that Hunter gave a large number of preparations to Franklin, for which he knew he had no use but would turn them over to Hewson. Thus in a letter written from Craven Street, October 30, 1772, Franklin acknowledges Hunter's intentions:

> Some time last summer, after your parting you wrote me a note, which I cannot at present find, but I think the purport of it was that you had some preparations which you could spare, and were disposed to give to me, desiring that I would call and look at them; I did so and accepted them; I apprehended it to be your supposition in giving them to me, that as I had no use for them, I should probably give them to Mr. Hewson, which I immediately did.

Perhaps Hunter by this time had begun to entertain some jealousy of Hewson's rapid rise and success which, if Hewson had lived, possibly would have equaled or eclipsed his own. Hunter must have had some pride in Hewson's rise to fame for it was partly under his guidance as a student and later as an associate that Hewson's success came so quickly. From the manner in which the two men wrote of each other we are led to suppose that they finally did not retain any acrimonious feeling from the disagreement which had led to their separation. Thus in his Introductory Lectures to his last Course of Anatomy, Hunter spoke in the following terms of praise of Hewson:

Benjamin Franklin
(1706–1790)

> Mr. Hewson, whom I first bred in anatomy, then took to my house to work for me, and under my direction in practical anatomy, to attend my dissecting room, and read some lectures as my partner, which he did for a number of years, Mr. Hewson, I say, by a continued course of observations and experiments made in this house, discovered and fully demonstrated the lymphatics and lacteals, both in birds and fishes, which confirmed the use and importance of the absorbent system in the human body, and in comparative anatomy was one of the greatest improvements that could have been made, to establish the universality of nature's laws in animal bodies.

Before Hewson began his own course in anatomy he gave a lecture, to which he invited many men of science, on the uses of the spleen, thymus, and lymphatic glands. An imperfect abstract of his "Account of the Structure and Offices of the Lymphatic Glands, of the Thymus Gland, and of the Spleen" was published without his concurrence in the *Medical and Philosophical Commentaries*,[3] 1773, and later Magnus Falconar, his colleague and partner in the new school, published Hewson's observations and experiments on these subjects in the third part of "Experimental Inquiries into the Properties of the Blood." Since the discovery of the lymphatic vessels by Rudbeck and Bartholin in 1651–2, the lymphatic glands had been considered appendages to the lymphatic system but their finer structure and function were in the time of Hewson entirely unknown. We must remember that it was not until 1838 that the cell theory of Schwann was advanced, and the floating particles in the blood were usually spoken of as pale and red globules. Hewson was the first to examine accurately the fluid of the lymphatic system, of the thymus, and of the vessels which run from it into the veins at the lower part of the neck. He described the corpuscles common to all these fluids, and saw the "pale globules" in the blood. He was the first to describe the lymphocyte as the common cell of all these fluids.

> On cutting into a fresh lymphatic gland, we find it contains a thickish, white, milky fluid. Then if we carefully wipe or wash this fluid from the cut surface, and examine it attentively under the microscope we observe an almost infinite number of small cells, not such as have been before described, or that have been supposed to exist in the lymphatic glands, but others too small to become visible to the naked eye . . . and if we dilute it sufficiently, we can examine them separately and view them as distinctly as we can the particles of the blood.

It is an interesting fact that Hewson used single rather than compound lenses, for at this time the compound microscope was very imperfect and there was much prejudice against its use. Hewson used in some of his observations lenses which had been presented to the Royal Society by an ingenious observer by the name of Father de la Torré, and which magnified the diameter of the object 640 and 1280 times. These glasses or "globules" as they were called had poor definition owing to the fact that they were smoked and clouded in the process of making. In most of his experiments he used a lens which magnified 400 diameters, but which had much better definition. With these instruments, Hewson made extensive observations on the blood corpuscles, and his observations were more exact and complete than any that had been made before on the red corpuscles. He finally exploded the error of Leeuwenhoek that those of the mammalia are spherical by proving their flatness, and showing that they may accordingly be seen laid one against another in rouleau formation like "guineas." He proved that water does, however, render them spherical, that their flat shape is preserved by the salts of the serum, or by a weak solution of a neutral salt, and that they are contracted or shriveled by a stronger solution. Hewson was therefore the first to prepare and use physiological saline solutions and to observe the effect of osmosis on cells. With serum and normal saline Hewson examined the red corpuscles of representatives of practically every order of vertebrate animals as well as the body fluids of many invertebrates, and his figures of them are very interesting, if not accurate in all cases. He was the first to separate the red corpuscles by adding saline to fresh blood, such as Glauber's salts, or by the method of defibrination, pouring off the mixture of serum and corpuscles and allowing the red blood-cells to settle. There are thus few of the ordinary physical and chemical reactions of the morphological elements of the blood which were not observed by Hewson more than one hundred and fifty years ago. We should remember that at this time oxygen had just been isolated by Joseph Priestly who noticed that vegetating plants renew vitiated air, but it was not till after Hewson's death that Lavoisier in 1775 discovered the true nature of the interchange of gases in the lungs and demolished the phlogiston theory by his introduction of quantitative relations in chemistry. It is very interesting to note, however, that Hewson was very far in advance of most medical men in his day for he says:

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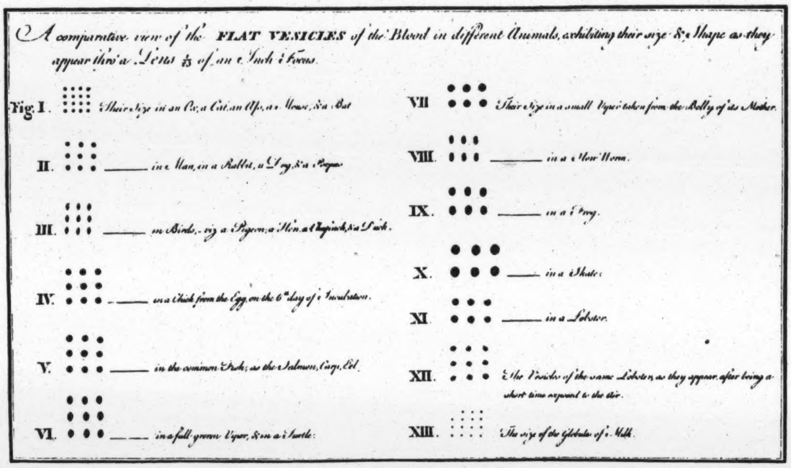
[3] Vol. 1.

> When it is considered that the blood of all animals is filled with these particles, we must believe that they serve some very important purpose in the animal economy: and since they are so complicated in their structure, it is improbable they should be made by mechanical agitation in the lungs or blood-vessels, as has been suspected, but probably have some organs set apart for their formation.

In his observations on the red blood corpuscles Hewson had noticed the shadows or central spots of the corpuscles of the mammalia and the nuclei of the lower vertebrates. These he interpreted as "central particles" on lymphocytes, surrounded by a red colored vesicular envelope secreted by the spleen. Hewson believed that the thymus and lymphatic glands are no more than appendages of the lymphatic system for making the middle particles, and it is a curious fact that he noticed that these organs are largest in early life when red blood corpuscles are in greatest demand and "when nature needs the central particles most."

In regard to the spleen Hewson thought that it forms red blood cells. This indeed was a great step forward when we consider that the generally accepted theory at the time was that these elements are formed by a process of mechanical agitation in the lungs. He thought that the spleen is the lodging place for the lymphoid cells which are deposited in the spleen where vesicles are secreted around them from the "coagulable lymph." In arriving at this conclusion Hewson had observed that the blood in the splenic vein does not coagulate so readily when exposed to air as the blood of other veins does so that it seemed to him to have been robbed of part of the coagulable lymph in passing through the spleen. In connection with his work on the blood Hewson mentions also what he calls the "remarkable fact that extirpation of the spleen does not kill the animal, because it is not the only organ of the body capable of doing that office." He observed the important fact that there is a difference in character among the corpuscles of the same blood, that they are larger in the embryo than in the adult; and that they split into an irregular number


A comparative view of the FLAT VESICLES of the Blood in different Animals, exhibiting their size & Shape as they appear thro' a Lens 1/23 of an Inch Focus.
Fig. I. Their size in an Ox, a Cat, an Ass, a Mouse, & a Bat
II. in Man, in a Rabbit, a Dog, & a [illegible]
III. in Birds, viz a Pigeon, a Hen, a Lapwing, & a Duck.
IV. in a Chick from the Egg, on the 6th day of Incubation.
V. in the common Fish; as the Salmon, Carp, Eel.
VI. in a full grown Viper, & in a Turtle.
VII Their size in a small Viper taken from the Belly of its Mother.
VIII. in a Slow Worm.
IX. in a Frog.
X. in a Skate.
XI. in a Lobster.
XII. The Vesicles of the same Lobster, as they appear after being a short time exposed to the Air.
XIII. The size of the Globules of Milk.

HEWSON'S FIGURES OF THE RED CORPUSCLES OF THE BLOOD OF VARIOUS ANIMALS. (FROM *Philosophical Transactions*, 1773, LXIII, 323.)

of pieces under certain circumstances from the circumference to the center, while each of these portions retains its red color, contrary to Leeuwenhoek's hypothesis then in vogue that the corpuscles are formed of six globules, their union constituting the red, and their separation the white part of the blood, or serum.

Hewson's three papers on the "Properties of the Blood" were published in the *Philosophical Transactions* for 1770; and form the first three chapters of the "First Part of the Experimental Inquiries." The present interest in his investigations is centered in this work, a fine example of the experimental method taught by the Hunters. It establishes the essential feature of the coagulation of the blood in an entirely modern spirit. No attempt will be made to consider the historical development of the subject, but in connection with the work of Hewson and the errors held by his predecessors and contemporaries, it must be remembered that the speculation connected with Leeuwenhoek's microscopical researches for many years supplanted accurate experimental investigations into the properties of the blood. Before Hewson's time, coagulation was ascribed to the supposed cooling off of the blood, to the fact that it had ceased to move, or to the idea that its corpuscles had solidified into rouleaux. When the errors consequent to this state of things began to be forgotten the blood sank into neglect. However, as early as 1666 Malpighi had washed away the coloring matter of the clot and obtained the white fibrinous part; while the observations of Borelli, "De motu animalium," published in 1680 were still more precise in that he described the compound nature of both the clot and the serum; the clot as consisting of "white fibers or reticulated membranes" and the serum as composed partly of matter coagulable by heat, and partly of water with salts. Richard Davies in England had made experiments on the blood as early as 1748 and gave the results of his own observations on the comparative weights of the serum, buffy coat, and clot. However, very erroneous or vague opinions were held in Britain by the best writers, and on the Continent by the most distinguished physiologists, as Haller and others up to, or even beyond 1771, the date of Hewson's first edition of his work on the subject.

Nothing can be plainer than the proofs given by Hewson that the coagulation of the blood is alone dependent upon the "coagulable lymph" or fibrinogen as we now know it. He removed this substance in its fluid state from the blood, and proved that the coagulation of the "lymph" is quite independent of the other parts. His experiments on the effects of various temperatures on its coagulation are very interesting and original; by freezing the blood he suspended coagulation, and restored it by thawing. He kept it fluid by neutral salts, and proved that it would yet coagulate by the addition of water. He showed from precise observations how much longer coagulation is in taking place when the blood is held experimentally or from natural causes in its own vessels, than when it is removed from them. In short Hewson showed that when the coagulation of the blood is delayed, as by cold, neutral salts, or otherwise, a coagulable plasma can be separated from the corpuscles and skimmed off the surface, and that this plasma contains an insoluble substance, which can be precipitated and removed at a temperature a little over 50° C. Coagulation then, in Hewson's view, was due to the formation in the plasma of this insoluble substance, which he called "coagulable lymph" and which we now know to be fibrinogen. However, Hewson's experiments were soon forgotten, even after Andrew Buchanan had shown, in 1845, that a substance can be extracted from lymphatic glands, the buffy coat of the blood, and other tissues which will coagulate not only blood, but other serous fluids not in themselves, coagulable. The modern discovery that fibrinogen is a nucleoproteid, and in coagulation is converted into fibrin, has thrown the important work of Hewson into stronger relief.

So far we have said little of Hewson's work as a practitioner, for he had quite an extensive practice, and made some keen and original practical observations. Thus he noticed when drawing blood, which was common at the time, that blood clots gradually at a wound, and that fainting is a normal physiological mechanism following a hemorrhage. He had observed the same in animals such as the sheep, that the coagulation of blood is more rapid the longer it flows. He had thus in a way anticipated the modern discovery of thromboplastic substances. In the treatment of hemorrhages he had concluded that cessation of bleeding is favored by quietness rather than stimulating remedies.

Thus early in 1774 Hewson had every reason to be gratified with his position in life. Lettsom says:

> In viewing the situation of our associate at this period, the most gratifying prospects presented themselves, where genius and industry were rewarded with success and domestic amities with felicity. The theater in which he delivered his lectures and expounded his doctrines was crowded with men of science, as well as pupils, to listen to a youth grown sage by experimental researches.

In short, Hewson was now surrounded by the blessings of life. This happiness, however, was soon to end, for while dissecting a putrid body he accidentally wounded himself, with a resulting septicemia, which, after a short illness, proved fatal on May 1, 1774, in the thirty-fifth year of his age. Benjamin Franklin wrote from Craven Street, May 5th, as follows: "Our family here is in great distress. Poor Mrs. Hewson has lost her husband, and Mrs. Stevenson her son-in-law . . . He was an excellent young man, ingenious, industrious, useful, and beloved by all that knew him." He was buried at St. Martin's-in-the-Fields, as appears from a notice of burials in the Register kept in the church of that parish: "May 6, 1774, William Hewson, a man." It is not known that any monument was erected to his memory, nor that he ever had an epitaph. The site of the grave is now unknown.

Thus Hewson is to be counted among that long list of medical and scientific men who have lost their lives while devoting themselves to the advancement of the science which they loved. Although the manner in which his life was sacrificed was neither dramatic nor extraordinary; although it did not lead to public recognition of valor or a lasting memorial, nevertheless, Hewson's name should be added to that illustrious roll of medical martyrs who have died in the service of humanity. Perhaps in the future when the relative merits of sacrifices in peace and war are more truly appreciated, such men will receive their just recognition as benefactors of the human race.

Members of the family of William Hewson still live. His wife after his death enjoyed the friendship of Benjamin Franklin and on his return to Philadelphia she was invited by him to go there and be his neighbor. She responded and lived there till 1792, and then moved to Bristol, Pennsylvania, where her eldest son, William, had a medical practice, and where she resided till her death, October 14, 1795. Her son, William, survived her only a few years, and died at Vera Cruz in 1802. Her daughter became Mrs. David Caldwell, and her second son, Dr. Thomas Tickell Hewson, became a distinguished practitioner in Philadelphia and was President of the College of Physicians and Surgeons from April, 1835 to his death in February, 1848. From 1806 to 1818 he was physician to the Walnut Street Prison, and his faithful services to the prisoners during the prevalence of a "malignant typhus fever" were very commendable. Besides holding many other important positions we find that in 1816 he was elected professor of comparative anatomy in the department of natural science of the University of Pennsylvania. His eighth son, Dr. Addinell Hewson (1828–

1889) of Philadelphia, was also well known and distinguished, and like a great many medical men who get their names connected with methods and cures they have advocated, in addition to his interest in therapeutic electricity "took up the earth treatment for wounds, contusions, inflammations, and surgical dressings," so that his name became connected with his so-called "earth treatment" about 1853. He holds the record of being the first to use electricity to detect the translucency of tissues in fractures. He had six children, and the oldest and only male survivor, Dr. Addinell Hewson, Jr., now lives in Philadelphia, and for more than forty years has been actively connected with medical education in that city, having held important positions in the anatomical departments of both the Jefferson Medical College and the University of Pennsylvania. He is now Professor of Anatomy in the Graduate Medical School of the latter institution and holds a similar position in the anatomical department of the Temple University Medical and Dental Schools. His son, Dr. William Hewson, third, also of Philadelphia, is a practicing physician in that city, and is connected with the medical department of the University of Pennsylvania.

William Hewson, second, had two medical descendants in the persons of Dr. David Caldwell Hewson (deceased) of Texas, and his son, Dr. John Percy Hewson. Thus from William Hewson, F.R.S., through each succeeding generation, one member of each generation has given to medical science either a teacher of anatomy or surgery down to the present time. It is also worthy of note that through each of William Hewson's three children there was, at least until recently, a representative of medicine.

"In the whole range of medical scientific life," says Sir B. W. Richardson in his sketch of Hewson, "there is not to my knowledge a single instance of one who in so brief a life as that of William Hewson, did so much medical work so well, or made in so short a time such an excellent history."

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THE EARLIER METHODS EMPLOYED IN THE TREATMENT OF SYPHILIS

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ALTHOUGH Ivan Bloch[1] considered that the American origin of syphilis was proven beyond contradiction, the tendency on the part of more recent writers is to regard his reasoning as fallacious. Bloch argued that because certain documents which had been relied upon to prove that syphilis existed earlier than the return of Columbus were found to be spurious, therefore the whole case fell down. But in recent years more undoubtedly authentic evidences have been discovered, and it is now generally believed by medical historians that syphilis existed in Europe long before the year 1495, in which it suddenly sprang into such terrible prominence. The works of Buret[2] and Sudhoff[3] contain overwhelming proof that in different forms and under many names, especially leprosy, syphilis was disseminated throughout all the countries of the Old World. The phenomenon of its sudden prominence corresponds with the development of a brilliant epoch in medicine, illuminated by the labors and researches of men who were to raise medicine out of its medieval thraldom. To their more exact methods and knowledge we may attribute a differentiation of syphilis from its leprosy and the supposed new diffusion to the kind of loose statements made by the ignorant when they speak as though the recognition of the disease, appendicitis, was that of a new disease instead of merely the result of new knowledge and power of differentiation. Certain it is that before the year 1500 there were some 19,000 leper hospitals scattered over Europe and Great Britain which vanished completely as syphilis came to the fore.

The name syphilis was first used in connection with the disease by Fracastorius in his poem entitled "Syphilis sive morbus gallicus," 1530.[4] The source from whence he derived the name is unknown. In the poem he uses it as the cognomen of one of the characters, a shepherd, who is stricken with it because of an act of sacrilege. Before Fracastorius applied the term, syphilis was known as morbus venereus, or more popularly was designated by the name of some nation, the Spanish and Italians speaking of it as morbus gallicus or the French disease; the French terming it the Spanish disease, or the Neapolitan disease. Europeans tired of attributing it to one another called it the new disease and blamed its introduction on the sailors of Columbus.

Until John Hunter, in the latter part of the eighteenth century, differentiated chancre from chancroid, all venereal sores or manifestations, including gonorrhea, were regarded as syphilitic and treated by the same remedial measures. Ricord[5] first established gonorrhea as a distinct disease entity.

The unfortunate predominance of quackery in the treatment of venereal diseases has been a notable fact from the earliest times to the present. To a great extent this state of affairs is attributable to the feeling of shame which the disease inspires in those who are its victims and the desire for concealment on their part. Other reasons prevailed in the fifteenth century. Buret[6] gives three statements quoted from Torella (1500), Wendelin Hock (1502) and Ulrich von Hutten (1519), which accord in saying that the regular physicians all recognized the failure of the measures which they adopted to combat the disease and consequently the quacks came to the fore vaunt-

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* Read at the meeting of the College of Physicians of Philadelphia, February 7, 1923.

[1] Bloch, I. Ursprung der syphilis, 1901.

[2] Buret, F. Syphilis in the middle ages and in modern times, translated by A. H. Ohmann-Dumesnil, Philadelphia, 1895.

[3] Sudhoff, K. Studien z. geschichte der medizin, Leips., 1912, and many other separate publications.

[4] Fracastoro, G. Syphilis, from the original Latin, St. Louis, 1911; Syphilis, a poetical history of the French disease, written in Latin by Fracastorius, now attempted in English by N. Tate, London, 1686.

[5] Ricord, P. Traité pratique des maladies vénériennes, Paris, 1838.

[6] Buret, F. *Op. cit.*

ing a great many supposed cures by all kinds of bizarre treatments, advertising themselves and their wares just as they do now, and numbering their victims by thousands. A very curious fact is that the most successful quack remedies of the sixteenth century contained mercury, which had been the favorite medicine against leprosy, given by fumigation or inunction.

For many generations the Arabians used mercurial salves in the treatment of leprosy and skin diseases. Roger, the great medieval surgeon of the twelfth century, and Theodoric, in the thirteenth century, advocated their use, and the latter described the salivation which followed their absorption.

A poem on syphilis which, though now less widely known than that of Fracastorius, had in its time great fame "On the Contagious and Accursed Buboes" was appended to "El Sumario de la Medicina," by Francisco Lopez de Villalobos, first published in 1498, thirty-two years before Fracastoro wrote his poem. Villalobos was the physician to Ferdinand of Spain in 1514. He was a learned and very witty man. An English translation of the poem with extensive notes was published by George Gaskoin.[7] Villalobos mentions the treatment in vogue of salivation with mercury administered by fumigations or inunctions, only to condemn it with the greatest vigor. He used mercury in an ointment solely as an application to the buboes, not for its constitutional effect. Villalobos, after giving instructions as to diet, hygiene and the use of mild purgation, recommended bleeding from the basilic vein, and the administration of theriaca.

Fracastorius, in his famous poem, written in 1530, ascribed the disease to astrological agencies, and stated his opinion that it had existed in various forms before its appearance as a virulent epidemic in Europe.

The principles on which he based his treatment were the chief mainstays of the therapeutics of syphilis for some hundreds of years after he wrote. His precepts begin with the advice to seek a sunny, dry climate, avoiding marshy, wet places, and to take strenuous exercise in the open air, such as hunting; or agricultural occupations, ploughing or hoeing and wood-chopping. He also advises dancing and playing shuttle-cock and palestra. He gives minute advice as to the diet; the patient should eat no fish taken from either salt or fresh water, except in case of necessity, and then only those which are fished near waterfalls in swift-moving water. He should eat no aquatic birds, nor the flesh of hogs, nor cucumbers, truffles, artichokes, onions, vinegar or milk, and should drink only very light wines. If the disease occurs in the spring or autumn, he should be bled copiously from the basilic or median vein and thoroughly purged. The patient should drink freely of decoctions containing mixtures of aromatics and bitters of which Fracastorius gives a long list. Lemon juice is particularly salutary. Ulcers in the mouth or throat are to be destroyed with verdigris, which is also useful to destroy the pustules on the skin. Osteocopic pains are to be relieved by the use of topical remedies of a soothing nature, such as goosegrease, mastic, linseed, daffodils, elder and honey.

Fracastorius says that possibly after having exhausted this series of remedies the patient loses patience because he has failed of obtaining relief by such mild but safe measures. Then, relying upon his strength, he resolves:

> To turn to more energetic agents to end the matter with the hated enemy as soon as possible. Be it so! I will show you these violent and expeditious methods which can triumph in a short time, over a disease that is usually long in duration, stubborn, subject to relapses and rebellious to mild medication. But also learn the price you will have to pay for your hasty deliverance.

After this rather unpromising induction Fracastorius describes first the treatment by means of fumigations composed of styrax, cinnabar, antimony and incense. He says that these fumigations should never be used on the entire body as they are very violent and irritating and may cause respiratory difficulties and suffocation. Therefore, their action should be confined to those parts which are the seats of eruptions or ulcers. If it is decided to use fumigations he prefers mercury as a basis instead of the other substances.

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[7] Villalobos, F. L. Medical works. Translated, with commentary and biography by George Gaskoin, London, 1870.

> The action of mercury on the scourge is marvellous, either because its natural affinity for heat and cold renders it proper to absorb the devouring fire of the disease, or because its surprising density permits it to divide and to dissolve the humors for a reason that is analogous to that which gives to incandescent iron a caustic action more marked than that of a light flame; or that its mobile and penetrating molecules, apt to infiltrate themselves in the warp of the tissues, have the power of consuming even to the bottom of organs the impure yeasts of the disease; or finally, that its magie virtues are derived from some occult forcc whose mystery escapes us.

Fracastorius says he administered mercury in an ointment mixed with black hellebore, orris root, galbanum, asafetida, oil of mastic and oil of native sulphur:

> So, without hesitation, spread this mixture on your body and cover with it your entire skin, with the exception of the head and the precordial region. Then, carefully wrap yourself in wool and tow; then get into bed, load yourself with bed-covering and thus await until a sweat bathes your limbs with an impure dew. Ten days in succession renew this treatment, for ten entire days you are to undergo this cruel trial whose beneficial effects will not cause you to wait. As a matter of fact, very soon an infallible presage will announce to you the hour of your freedom. Very soon you will feel the ferments of the disease dissolve themselves in your mouth in a disgusting flow of saliva, and you will see the virus, even the virus, evacuate itself at your feet in a copious flow of saliva.

Thus the salivation of the patient was the aim of the physician, for the system thus rid itself of the poison of the disease, and this was the fundamental principle of mercurial therapy for many generations.

Giacomo Berengario or Berengarius of Carpi, who died in 1550, has had his name immortalized in the pages of Benvenuto Cellini for the great success he achieved in the treatment of syphilis with mercurial inunctions. Cellini says, however, that Berengarius left Rome in great haste and very wisely because his patients all relapsed, "so that he would have been murdered if he had stayed."

The mercurial inunctions of the fifteenth century were certainly carried out in such a manner as to ensure salivation. The patient was smeared from head to foot with a thick semifluid mixture containing the mercury, which was applied with a brush, generally by a barber surgeon or an apothecary, called by Rabelais "graissiers de la vérole." After the ointment had been applied the patient was put in a great tub or cask and sweated. Many died of mercurial poisoning and some from exhaustion.

Paré's treatise on syphilis was based, as he states in a foreword, almost entirely on the less known book of his friend and fellow-worker, Thierry de Héry,[8] which had been published at Paris in 1552. He gives four methods of cure: 1. With guaiac given in decoctions; 2. by friction or rubbing with ointments, most of which contained sulphur or mercury; 3. by the application of plasters containing mercury; 4. fumigation with cinnabar.

It should be noticed that every one of these methods was based on the production of profuse sweating; the patient in order to facilitate this being swathed in blankets in a bedroom, or in the process of fumigation in a huge sort of cask. Paré does not make any mention of the internal administration of mercury.

Shakespeare alludes to the method of curing syphilis by fumigation with mercury and to the existence of hospitals or lazar houses where such treatment was given.

> PISTOL: No; to the spital go, and, from the powdering tub of infamy, fetch forth the lazar-kite of Cressid's kind, Doll Tear Sheet, she by name.[9]

To Paracelsus (1493–1541) is generally given credit for the popularization of the internal use of mercury in syphilis. Baas[10] quotes his vigorous statement, "This poison, as you call it, has a far different and a better effect than the wagon-grease with which in the treatment of the French disease you are so fond of smearing your patients, worse than a cobbler greases his leather." He rejected all other treatments, such as decoctions of guaiac, inunctions, fumigations, stating "If sweating will expel the French disease, a warm oven, or even a warm skin and the dog-days, would do it."

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[8] de Héry, Thierry. La methode curatoire de la maladie vénérienne, Paris, 1552.

[9] Shakespeare. Henry v, II, i, 78–81.

Mattioli (1501–1577) mentions, according to Wootton[11] that he had known women take a pound of quicksilver to produce abortion without producing any bad effect, and he quotes Falloppio (1523–1562) as remarking that in his time shepherds gave quicksilver to sheep to kill worms, and Brassavola (1500–1555) as stating that he had given it to children in doses of two to twenty grains for the same purpose.

Sprengel also says that Mattioli gave mercury internally in syphilis.

According to Wootton the first known formula for mercury in pill form was one which Barbarossa II, a pirate king of Algiers and an admiral of the Turkish Fleet under Solyman, Sultan of Turkey, sent to Francis I of France, in the second quarter of the sixteenth century. It may be recalled that Francis is supposed to have contracted syphilis from La Belle Ferronière. This formula, very slightly modified, was that of the famous Belloste's pills, which came into vogue about 1700 and are still retained in the French Codex.

Next to mercury, the first syphilographers placed their faith in guaiac as a remedy. It was called "the sacred wood." Guaiac was very largely popularized by a treatise written by a layman, Ulrich von Hutten, a German knight,[12] who was afflicted with syphilis when but twenty years old. In 1519 he published his "De guiaci medicina et morbo gallico," in which he narrated his experiences. For nine years he was treated with mercury, during which time he thinks the treatment only served to aggravate the disease. He finally achieved his cure by drinking decoctions of guaiac.

Fracastorius in his poem, written in 1546, speaks highly of the virtues of decoctions of guaiac, but relegates it below mercury. The root of Chinese smilax was another remedy which was highly extolled in the fifteenth century. Vesalius in 1546 wrote a treatise on it entitled "Epistolae de radice Chinae." It owed its fame largely to the fact that the Emperor Charles V used it for his gout, but it seems to have proven as useless in the cure of syphilis as it was in the case of the Emperor's gout. Vesalius thought it inferior in value to guaiac.

Another root soon supplanted smilax and to a certain extent has maintained some reputation as an antisyphilitic, especially among the laity, even to the present day. This was sarsaparilla. Physicians still use it as a vehicle for the administration of potassium iodide.

According to Wootton[13] a certain Antonio Lecoq, a physician in Paris, acquired a great reputation, about 1540, for the cure of syphilis with gold. "Fallopius, Hoffmann and Pitcairn, of Edinburgh, more or less fully adopted his treatment, but the theory gradually dropped out of medical practice." Early in the nineteenth century Dr. Chrestien of Montpellier, revived it and it was tried out in some French hospital with very disappointing results.

The credit for introducing the use of potassium iodide in syphilis is ascribed to William Wallace of Dublin, who in his "Treatise on the Venereal Disease and its Varieties," published in 1833, recommended it in advanced cases of the disease.

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[10] Baas, J. H. History of Medicine, translated by Handerson, New York, 1889.

[11] Wootton, A. C. Chronicles of Pharmacy, I, 409, London, 1910.

[12] The College of Physicians of Philadelphia possesses three interesting copies of the most important English translation of von Hutten's treatise. Thomas Paynell, a chaplain to Henry VIII, published in 1536 his translation entitled: "Of the Wood called Guaiacium that healeth the French pockes, and also helpeth the goute in the feete, the stoone, the palsey, lepree, dropsy, fallynge evyll and other dyseases," another edition appeared in 1540. In 1730, Daniel Turner, of London, revised and republished Paynell's translation.

[13] Wootton, A. C. Op. cit.

PRIMITIVE MEDICINE IN THE PHILIPPINES*

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INTRODUCTION

IN medicine historical research demonstrates the knowledge of its progressive evolution to be as instructive, far-reaching and universal as is the study of diseases, their prevention and treatment. Local investigation of the subject is useful in that it not only discloses all the eddies and currents of opinion and theory traversed by the explorers of yesterday, their brave, earnest, unselfish aspirations after truth, but also the peculiar ideas fundamental to the cultural growth of local medical practice, the succession of basic facts gained in the struggle of science with mysticism, superstition, credulity, and charlatanism. Such knowledge is, indeed, indispensable for good and successful work in medical practice in the Philippino community.

Modern medicine, whether dealing with the cure or with the prevention of disease, is based upon and demands a correct and proper diagnosis, and there is no better help to a good diagnosis than the verification of actual social conditions prevailing among the people. Old formulated beliefs, superstitions, and ancient and inherited traditions are ingrained in different degrees among various peoples and communities, according to the opportunities available to them during their period of progressive evolution.

The present paper deals only with the salient features of primitive medicine in the Philippines. In discussing the folk-medicine of an archipelago with a population of over 11,000,000 of the most diverse ethnic strains, speaking some sixty different dialects, it would be absurd to pretend to be exhaustive within a few pages; but this paper may help to demonstrate the unity of medical folklore in space and time, and that the medicine of the primitive Philippines is not essentially different from the folk-medicine of the Assyro-Babylonians, Hindus, Greeks and Romans, or the still existing medicine of such tribes as the North American Indians, Malays or Polynesians.

IDENTITY WITH OTHER MODES OF PRIMITIVE MEDICINE

Medicine in the Philippines, like that of any other nation in the world, began with mythology and with the usual primitive knowledge of medicinal simples. Medicine was held to be of deific origin, as being the expression of a natural curative instinct, the desire to relieve ills and suffering independent of reasons; and he who practiced it without hope of reward was regarded as divine. Floundering, therefore, in the mists of ignorance and superstition, our ancestors sought the explanation of medical phenomena in their religious beliefs, attributing the occurrence of disease to supernatural beings and objects (gods, trees, etc.); to evil spirits (devils, duendes, etc.); to human enemies possessing charms, e.g., the mankukulam.

It is almost universally admitted that beliefs, myths, superstitions, laws, religious ideas, and social customs of different peoples all over the earth converge to a common point of similarity. While such practices and devices possess no remedial value *per se*, yet far be it from us to ridicule the efforts of primitive man to relieve the sick, suffering and despairing, since they afford evidence of a spirit of self-helpfulness among a people naturally superstitious and credulous and to whom science was practically unknown. To cite a concrete example of the identity of different modes of primitive medicine, Jenks says that the Negritos belief in the efficacy of carrying certain pieces of wood as a cure against rheumatism is not far removed from the rural American superstition that rheumatism may be cured by carrying a horse-chestnut in the pocket. Such beliefs and practices have not been unique in these islands.

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* Read before Fifth Assembly of Physicians, Manila, P. I., February, 1922.

ORIGINS

Much of our earliest primitive practice of medicine has, unfortunately, been buried in the shaded past through the failure of our ancestors to preserve it in writing. Information now available regarding this subject has come down to us chiefly by oral tradition through many generations possibly infiltrated to a certain extent with Indo-Chinese elements or those of other neighboring regions as well as of Europe. Oral tradition and old documents written by the early Spanish missionaries in the Islands show that, before their occupation of the Philippines, the medical art in our country had been quite advanced, considering the stage of civilization existing at that time. The natives recognized many diseases, and applied many rational remedies, aside from witchcraft and psychotherapy. They knew the medicinal values of innumerable native trees, shrubs, bushes, vines, and herbs, which they administered to their sick.

But, in spite of the extreme difficulty of determining precisely what elements are indigenous and what foreign, in view of their peculiar modifications in time, there is strong evidence that our different tribes received their first, fundamental ideas of medicine in common with the Malays of the Malay Archipelago with whom we have so many traits and superstitions in common. Among these are the following: The spirit Matianac, or Patianac, or Pontianac, associated with stillbirths is found in all Malayan mythology. Matianac is a Malayan compound word from *mati* to die, and *anac*, child. This meaning is still preserved in some Philippino dialects. In Pampanga, also, *mate* means to die and *anac*, child. The native variously calls this spirit Matianac, Patianac or Tianac. The offering to the spirits and to other deities of betel nuts and leaves, or *buyo*, has been a common practice both among Philippino natives and other Malayan tribes in the neighborhood.

HEALERS AND INTERMEDIARIES

The first healers of the sick were mythological in character. Bathala and Lakhanbakor or Lakhanbakod among the Tagalogs, Magbabaya and Malaki t'Olu k'Waig among the pagans were invoked by prayers and were offered sacrifices to restore the patient to health or to prevent sickness. The Nunos, the Anitos and Diwatas are lesser gods who were similarly invoked and sacrificed to for the same purpose.

Tigyama is a protector of the household and, at the same time, a reputed leech. The Manaug of the Manobos is the god that cures diseases of the eyes.

This belief naturally gave rise to the so-called intermediaries or mediums who used to mediate between the deities and the sick, and by whose instrumentality messages were brought from the unseen. These also officiated for the patient by means of magic, charms, sorcery and talismans. Among such intermediaries are the priestess healers or Catalona, the Pandita, the Baylan, and the Manganito.

Among the Tagalogs, there was a special class of priestesses called Catalona, whose duty it was to cure the sick person and mediate between him and Bathala or other deities. She was reputed to have knowledge of some native vegetable remedies, which she applied, commingled with magic spells, aside from the employment of prayers, charms, and sacrifices alone. Her duties whether administering drugs or charms, or conducting sacrifices were executed by dancing about the patient. Many of these persons were old women, who were also summoned in cases of sickness and accidents of childbirth. A few men, however, were priest healers.

Pandita is the highest ranking priest of Mindanao. This priest still exists today and is entitled to open the Koran to ascertain the diagnosis of disease as well as to determine its prognosis. The Baylan performs similar functions among the Manobos.

The Manganitos, who are still found among the pagan non-Christian tribes throughout the Islands, act as a medium between the patient and the gods or spirits. According to Benedict, the medium, who attended the Guinum of the Bagobos at Talum in order to find out from the Anitos the cause and treatment of the sickness of Malik, the son-in-law of Oleng's sister was Singan, one of Oleng's wives.

The Mangkukulam or Mangagaway is a witch who cures diseases that he or she or other members of his or her class have produced.

As our primitive ancestors advanced a little in their experience, naturally there arose a class of healers, claimed expert in herb-doctoring and called herbolarios by the people of Luzon, and tabib by the Mindanaos; and another class who helped in the management of labor called hilot by the Tagalogs, ilot by the Pampangas, and ualian by the Mindanaos. Treatment by the medicine-man, the herbolaries and the tabib, consisted of a mixture of religious exercises, superstitions and charms with the administering of native herbs or other plants. Crude surgery, consisting chiefly of opening abscesses, was also performed. A special class of herbolarios called hilot devoted themselves to bone-setting. Relics of these ancient healers still exist today as quacks.

The so-called Manunumang in Ilocano, or Tock or Tawack in Pampanga were native specialists who occupied themselves with the treatment of snake-bites.

The etiological factors of disease in primitive man were legion. Untutored and ignorant of the nature of the morbid and pathologic conditions of diseases, also unwarned against the hostile ravages of microorganisms, he at first reacted with wonder, fear, or pleasure to natural phenomena, and regarded bodily ills and sickness as due to the manipulation of evil spirits; to the anger and vengeance of gods and deities; to unfulfilled customs, promises and oaths; to the malevolence of human enemies or sorcerers; to the inherent power of certain objects to cause maladies; to the days of the weeks; to hunger, wind, water and poisons.

SPIRITS

They are supposed to be seen by domestic animals, e.g., when a carabao runs away from his shed at night, he is said to see a disease-producer and some one is sure to fall sick. The general run of these are the Matianac or Patianac, or Tianac, which, among the Christian tribes of the Islands, are believed to be the spirits of infants who died unbaptized, and among other tribes, of stillbirths and whose evil work is claimed to be the cause of stillbirths. Among the Tagalogs and Pampangos, the Tianacs, or spirits of unbaptized infants, are analogous to the Chthonioi of ancient Greece. They are said to entice country people away from their huts with fair promises until they lose their way and can only return by wearing their clothes inside out.

The Asuang, which may be equated with the Busao of the Mindanaos people, is believed to be a spirit of the dead and is held to be the cause of accidents or of ill-success at birth. Another variety of Asuang is a living person in the guise of a night-hawk, who is feared as a devourer of infants, a vampire and a ghoul. The Basao is also said to produce a disease called habay.

The Tigbalang among the people of Luzon and the Visayan, analogous to the Tigabanua of the Mindanaos people, is a large evil animal that floats in the air under variable shapes and forms, now a bird, a horse, a dog, a man, etc., and is said to bring serious diseases to people. Its usual semblance is that of a horse with a short waist and long legs, and it can also lead the unwary into destruction by assuming human form.

The Duende is an evil spirit that sometimes befriends and helps people. It can enter any part of the body of any person it wishes to sicken, causing intense pain.

The Gaway is generally believed to be the cause of the sickness called bunsol, which affects the whole body, producing unconsciousness in the patient, and sometimes delirium.

Among the people of Mindanaos, there is a class of spirits which is believed to be the cause of an epidemic disease called patunguina.

Salut is a disease-demon that causes cholera.

All these spirits, including those that cause epidemic diseases, speak to the people through their mediums, in connection with religious or sacrificial ceremonies.

Among the mythical birds, Tictic is said to be the accomplice of Asuang. It goes about at night in search of women in labor and makes certain sounds to indicate to the Asuang any house where there is a parturient woman. The Wak-uak is another mythical bird, believed to be sent by the Busao to hunt for living persons as prey.

ANGER AND VENGEANCE OF DEITIES

The wrath and vengeance of certain deities, or even blunders of individuals are regarded as sufficient causes of disease. The Nunos, the spirits that live in the Balite are the spirits of dead ancestors, and are said to produce the illness called nasumpong.

The Anito, among the people of Luzon, or the Diwata, among the Visayans and the Mindanaos, is a variable concept throughout the Islands. Hardly any two writers agree as to the meaning of the term. Among the Luzon people the nature-deities of the mountains, plains and sea, as also the small images impersonating them, and the spirits of dead ancestors, are called Anitos. This term was applied later to any superstition and false worship. Among the pagan tribes of the Islands, the spirit that causes epidemic diseases is also denominated Anito. Nunos and Anitos are obvious equivalents of the Chthonioi of Greek Mythology.

UNFULFILLED CUSTOMS, PROMISES AND OATHS

The simple transgression of a tribal custom or mandate is, like the Polynesian taboo, adequate to cause diseases of varying nature and severity; for certain divinities are extremely jealous of their ancient rights and the failure of any sacrificial object to come to the altar brings sickness upon the people as a punishment.

Non-fulfillment of promises or oaths is also regarded as an efficient and sufficient cause of disease. This is still believed in among the pagan tribes of Mindanaos. Malik, during the Guinum (a religious ceremony), found that his sickness was due to the "disease that goes around the world," caused by the fact that he had broken a taboo, that is, he had spoken to certain men during the eight days of a ceremonious interview with the gods when he was forbidden to speak to anybody.

MALEVOLENCE OF HUMAN ENEMIES OR SORCERERS

Anger, vindictiveness or fondness for certain individuals of the so-called Mankukulam or other human sorcerers is a sufficient cause of disease.

Among the Visayans, the Mangalo is said to cause death to young people by taking out their entrails.

The Hocloban are powerful witches, more potent and efficacious in causing injury than the Mankukulam. Without the aid of medicine, and by simply saluting or raising the hand they can kill whom they chose.

The Silagan appropriates and eats the livers of persons clothed in white.

The mankukulam or mangagaway, a male or female adept in witchcraft (which can be transmitted to heirs), is, even today, the terror of many. He is supposed to be almost omnipotent in doing evil to neighbors who gain his ill-will or his enmity. By volition alone, or by manipulation of his rag-doll or other tokens of witchcraft, called kulam, he is able to make them sick. But he or she usually resorts to sticking pins in any part of the body of the rag-doll, corresponding to the parts of the body of the person he desires to injure. The ailments usually attributed to him are intense headaches or pains in other part of the body, boils, internal tumors, or swelling in the head or any other place.

A Mankukulam is called Manguuhia when he exercises his witchcraft on children he has become fond of.

The belief that the Papapantac (the analogue of the Mankukulam of Luzon) is a disease producer, is still in vogue among the lower-class people of Mindanaos. According to Dr. L. Gomez, the people of Liañgan, on Illana Bay, in Lanao Province, are greatly feared because they are reputed to possess and practice the witchcraft of the so-called Papapantac, who when exercising it, pray for seven days, since the birthday of any person must have been one of the seven days of the week. On these days he abstains from washing his anus and external genitalia after performing an act of nature. Then he (or she) moulds a human figure out of clay or tallow, or draws a human picture on paper, or uses an egg or a lemon on which are marked the earthly and heavenly names and place of residence of the person intended to be made sick. The human figure is placed in cold water on the fire, then exposed to the sun and rain, or pricked with a needle or a knife, according to the kind of disease desired and the part of the body intended to suffer. A tail of a buri is attached to the egg or lemon, and after seven days of prayer, the egg or lemon is inclosed in a box and allowed to fly to the person to be injured.

Inherent Power of Certain Objects

Gamut, a resinous substance extracted from certain trees, is reputed to have the inherent power of producing illness in any persons, provided the carrier ties a lump of it in the girdle or keeps it in a carrying-bag. The word, gamut, is interesting in concept: Among the Bogobos, it means a plant substance causing mysterious ailments; among the Ilocanos, poisons; and medicine among the Tagalogs.

Parayat is the name of another magical substance among the Bogobos. It is employed to procure the death of a childless rich man, with the object of seizing his property. The sorcerer or operator accomplishes this simply by carrying about the substance called paparayat, which will cause the rich man to fall sick and die of a disease called by the same name. It is interesting to note here that in Pampanga the word parayat means deceit.

Palumi is a charm manipulated by women to make a man thin and anemic. They put the palumi into a cup of water and throw the water over the man who has incurred their displeasure.

Some Panditas still believe that diseases have an etiological relation with the day of the week on which the disease begins. A disease beginning on Sunday is caused by the devil; a disease beginning on Monday is caused by the wind; on Tuesday, by water; on Wednesday, by the sun; on Thursday, by hunger; on Friday, by an agent acting while one is asleep; and on Saturday, by an internal wound.[1]

Among the primitive Philippinos, exposure to air causes any kind of illness; and taking a bath, especially when the moon is in full, or even mere touching of the water with the hands or feet, may produce very serious diseases. Certain kinds of ailments are attributed to hunger. The diseases caused by these factors are called hañging and pasmá.

By chance, intuition and experience, certain poisonous substances have from very early times, been found to produce serious or even fatal illnesses when taken into the system. Among the pagan tribes of Mindanaos, a disease produced by poisons administered by another person is called kumintan.

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[1] Gomez, L., *Philippine J. Sc.*, 1917, XII, Sec. B, No. 6, p. 225.

METHODS OF DIAGNOSING DISEASES

There are several means of ascertaining the causes and nature of diseases. The practice called tauacal, as described by Dr. L. Gomez, is still in vogue among the Mindanaos people. This is to find out the cause of the disease in relation to customs, promises, and oaths, deducing therefrom, at the same time, the method of treatment. An egg is divided in five equal areas radiating from the smaller end, and on the areas thus outlined the following words are marked: asal, sapá, panaman, samayá, and umor. The egg is placed in a cocoanut shell in such wise as to make it stand up straight, and a pinhole is made at the center of its smaller end. After praying to God to point out the true nature and cause of the disease, a piece of burning charcoal is applied to the bottom of the egg. The heat dilates the air-space of the egg and expels some of its contents, and according to the area in which this occurs, the cause of the disease is indicated. In the area of asal, the patient is sick because he forgot to follow such ancestral customs as praying, giving alms, etc.; in sapá, the patient did not fulfil an oath taken on the Koran; in panaman, he failed to fulfil an unspoken promise; in samayá, he has failed to fulfil a spoken promise; in umor the cause of the disease may be anything, but the patient will positively die.

In the religious ceremony instituted by the Luzon people to ascertain the cause of the disease, the medium (usually an elderly woman) spoke with the spirit, Anitos or Nunos, who told her the cause of the ailments, and their probable outcome, with divine instructions as to the treatment to be followed. These spirits or deities speak through the mouth of the medium in different tones.

Among the Manobos, in case the disease is limited to pains in any part of the body except the eyes, the baylan or medicine-man lights up a wax candle, which he places on a sort of altar, and invokes the god Magbabaya with whom he appears to converse, while as the god's mouthpiece, he himself answers his own questions in a different tone. This god then announces, through the medium of the baylan, the cause of the illness.

In other cases, the patient is made to hold a piece of paper while another piece of the same paper is dropped into a glass of water, the medicine-man uttering some mystic words; then he takes the paper from the hand of the patient and claims that he can see written on the paper the name of the disease and its treatment.[2]

The anting-anting man makes a diagnosis simply by consulting his anting-anting, or amulet, or by touching the patient with it.

Other healers light a wax candle, place it before an image and then invoke the saints or certain deities as to the cause and treatment of ailments, accompanied (or not) by prayers and dances.

When the alleged cause of sickness is fright, fear, or surprise, a magratawas (a sort of diagnostician) passes over the patient glowing embers, to which salt, and alum are added, to determine the specific object that caused the illness, the form of the same being assumed by the alum.

Diagnosis is also made by feeling the pulse of the patient while the mediquillo utters the following charm which is not essentially different from those found in Aetius and other Byzantine medical writings:

✠Sit Christes mortosos✠
Sit Christos Sepolnios
✠Sit Christos Resurectet
✠Christus Ascendit✠
Christos empirit
✠Christos de polgorimos defendat
✠Christus pobi dam estate Sanctus
Dios Sanctus portes.

The sign of the cross indicates that it is to be made opposite some part of the body while pronouncing the charm.

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[2] Dr. Garrison states that according to Rhazes, similar devices or trade-tricks were employed by the Arabian charlatans.

METHODS OF DETERMINING THE PROGNOSIS

There are several methods determined by the day on which the person has fallen sick. As a general rule, diseases contracted on Tuesdays and Fridays are considered serious or even fatal.

When a dog bays mournfully into the air at night, he sees an evil spirit, and signifies that some sick one is about to die. The clucking of a hen at midnight portends the same omen.

Among the Tagalogs, the Catalona, or priestess who performs the sacrificial ceremony and mediates between the god and the patient, orders first of all, a new house to be built at the expense of the patient. When the house is completed, usually within a brief period, the patient is brought into it; and the sacrificial object, sometimes a slave, but usually a pig or other animal, is placed before the sick person, with other dishes of his liking. Then the Catalona, with the usual dancing steps, approaches to wound the sacrificial animal, rubbing the sick and others in the crowd with its blood. The animal is now cleaned, cut into pieces, and cooked until ready to be eaten. The Catalona takes good care of the entrails. Making wry faces, and wagging her legs and hands, with foaming mouth she approaches the animal as if calling attention to, or being swayed by the devil in order to gain credence. In this fashion, she foretells what will be the outcome of the sickness, favorable or adverse. If favorable, the festivity is great; but if the patient dies all rejoice and say that the gods have selected him to be one of the Anitos after which he is worshipped as a saint.

A method of determining the probable outcome of sickness among the Mindanaos is by consulting the Koran and by ascertaining the hour, day, month, and tide in which the disease began. This is still practiced among the Mohammedan tribes. The opening of the Koran is done by the highest ranking Pandita (priest) or Hadji (person who has been to Mecca), with the eyes closed, and accompanied by prayers. The first consonant letter of the seventh line of the page to the right is noted. This letter is called *aual*. Then seven sheets of the Koran are counted to the left, beginning with the sheet next to the page where the *aual* was noted, and the first consonant letter of the seventh line of the page to the right (left face to the seventh sheet) is also noted. This letter is called *agir*. Every consonant letter in the alphabet has a meaning with regard to sickness and other conditions or enterprises. In estimating the probable outcome of the disease by the *aual* and the *agir*, the *agir* is of paramount importance. If both letters (or if the *agir* alone) are of bad significance, the prognosis of the disease is bad. If both letters (or if the *agir*) connote something good, the prognosis is good. If the *aual* and the *agir* turn out to be the same letter, a tangung results and the prognosis is bad. When both are the letter *alip*, then the patient will irrevocably die.[3]

The prognosis of disease is also influenced by the cutica, or the hour (*wactu*), in which it begins. The good cutica in relation to disease are maisuara, sry, and bisnu, the non-favorable are kala and barahama. During the first day of any month, the maisuara occupies the hour period subu, which is from about six in the forenoon to two in the afternoon; the kala reigns during the period of lujur, which is about from two to four in the afternoon; the sry reigns during the asal period, which is from about four to six in the afternoon; the barahama reigns during the magarib period, which is from about six to eight in the afternoon; and the bisnu reigns in the hour period aisa, which is from about eight in the evening to six in the morning. During the following days, the cutica rotate in order, until the end of the month, when at the beginning of the new month the maisuara again regins in the subu period.[3]

A disease that begins on Sunday, Tuesday, and Saturday has a bad prognosis. A disease that begins on Thursday, Friday, and Monday is of good prognosis. A disease that begins on Wednesday has neither a bad nor good prognosis. A disease that begins at high tide is liable to be serious; one that begins at low tide is more likely to be slight.[3]

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[3] Gomez, L. *Philippine J. Sc.*, 1917, Sec. B, No. 6, pp. 266–268.

MEANS OF TREATING SICKNESS

As a general rule, the methods of treating sickness recognized as most efficacious are three, any one of which may be used either by itself or in combination with the other two. These are (1) prayers and sacrifices; (2) amulets, charms and spells, and (3) the native materia medica, which is fairly extensive if not intensive.

1. In the mystical period, before the advent of scientific knowledge, people first resorted to prayers and sacrifices during sickness. A devotional gift or food was laid upon the altar or in the ground, accompanied by prayers, invoking the aid of the god or gods, or other superhuman spirits, to procure health and freedom from pains, sickness, or death. The ceremony was usually performed by the intermediaries (an old man or woman) or a priest-doctor, and was believed to be efficacious in the prevention or cure of any kind of malady. The prayer usually lasted for three or nine consecutive days.

To counteract the influence of the Papapantac or to avoid other kinds of evil, the Moros place under the mattress of their beds a goat-skin variously colored and offer a prayer (*tindig*) before going and before leaving the bed.

The usual manner of offering sacrifice is to proclaim a feast, with offerings to the devil or deities of good food to eat. This is done in front of the idol, which they anoint with fragrant perfumes, e.g., musk and civet, or gum of the storax-tree and other odoriferous woods, praising the idol in poetic songs sung by the officiating priest or priestess (Catolonan or Catalona). The participants make responses to the song, beseeching the idol to favor them with things of which they stood in need, and generally, after offering repeated healths, all become intoxicated. In some idolatries, it was customary to place a good piece of cloth, doubled over the idol, and over the cloth a large gold ring, a mode of worshipping the devil without having sight of him. The devil was sometimes liable to enter the body of the Catolonan, and assuming her shape and appearance, filled her with so great arrogance that she seemed to shoot flames from her eyes; her hair stood on end, a fearful sight to beholders, as she uttered expressions of arrogance and superiority. In some districts (especially the mountainous), if the devil or the Anito incarnated itself in the form of its minister, the latter had to be tied to a tree by his companions, to prevent the devil or the Anito from destroying him in his infernal fury. This, however, happened but rarely. The objects of sacrifice were goats, fowls, and swine, which were flayed, decapitated, and laid before the idol. Another ceremony was the cooking of a jar of rice until the water evaporated, after which the jar was broken and the rice, remaining intact, was set before the idol while all about it, at intervals, were placed a few buyos, with other foods and fruits. All these articles were eaten by the guests at the feast; the heads (of the animals), after being "offered" in sacrifice, were cooked and eaten also, as among the ancient Greeks.

Among the Bagobos, there is a ceremonial food called omok, the chief constituents of which are chicken meat, rice, and grated cocoanut meat. This substance is red when raw, but turns dark or almost black after boiling. The sacred food must not be cooked in clay jars, but invariably in vessels of bamboo. After the unseen god has extracted the essence of the omok during the ceremony, the material part is eaten by men and adolescent boys to render them immune from disease. This part of the sacred omok, however, contains no sacrificial meat.

Among the Christian tribes, the offering at the altar of wax models representing the part of the body affected (*ex-voto* offerings) was quite as common as among the Greeks and Romans and some peasants of modern Europe.

2. An amulet, or anting-anting, is an object or congeries of substances of inherent medical potency, the majority acting as preventive medicines. The potency of the amulet is usually increased by citing magic formulas. It often consists of certain symbols or certain objects and articles, possessing magic virtues (stones, seeds, pieces of metal or wood, small images, etc.), usually carried about the body or attached to necklaces and girdles. In many cases, the efficacy of these amulets is so closely associated with magic numbers that if any other number than those used is added, the magic is broken straight-way. Even numbers are usually lucky, odd numbers unlucky. Many objects worn about the person are amulets, e.g., the bracelets or leglets of the non-Christian tribes, and the necklaces of the Christians. Bracelets are worn in even numbers to maintain their efficacy. Closely associated with this idea is the place where such amulets are to be worn; change the place and the spell is lost. Bracelets made of coral or glass beads are worn around the wrists of babies to prevent the illnesses that occur during the teething period and to confer immunity from disease. An anting-anting (amulet), consisting of the anus of a chicken used as a bracelet, is also held to be efficacious for the same purpose.

The potency of a talisman usually attaches to certain symbols or written charms (characters), carefully guarded as a rule, but not necessarily worn about the person. In the Philippines, such articles are worn or the formulae are pronounced in order to be effective. When a disease is caused by an evil spirit or devil, a cure is usually effected by the one who is friendly to the devil causing the ill or by mentioning to the devil the name of God or some saint. In connection with this the following native folklore is of interest. A devil who was buried by a hired guanchinango, promised to give the latter money to gamble with, provided he (the devil) was set free by this. But the guanchinango, after having for the third time lost all the money the devil had given him, threatened to bury the latter deeper if he refused to give more money. As the devil had no more money to give, he said:

"I have a plan in mind which will benefit you extremely but before I explain my plan, let me ask you if you would like to marry the daughter of the king.

"I have a great desire to be king some day," said the guanchinango; "but how can you make me the husband of a princess, while you are only a devil, and I am nothing but a poor guanchinango?"

"As soon as you set me free," said the devil, "I will enter the mouth of the princess and go into her brains. Then I will give her a very painful headache which no physician can cure. The king will make an announcement saying that he who can cure his daughter of her disease shall marry her. When you hear this announcement, go to the palace at once, and offer your services to the king. As soon as you reach the princess, tell me that you have come, and I will leave her immediately. The princess will then recover her former health, and you will be married to her. Do not fail to go to the palace, for I am determined to reward you for your kindness to me."

After the guanchinango had liberated the devil, he immediately set out for the city. He had not been there three days when he met a group of soldiers crying that "he who could cure the princess should have her to wife." The guanchinango stopped the soldiers, and said that he would cure the princess. They took him before the king, where a written agreement was made. If he could not cure the princess in three days, he would lose his life; but if he cured her by the end of the third day, he should marry her. The guanchinango was then conducted to the room of the princess. When he approached her, he said to the devil that he had come. "You must leave the princess now; for, if you don't, I shall be executed." But the devil refused to leave, because he wanted to get revenge. He further told the guanchinango that he wanted him to die for then his soul would go to hell.

The guanchinango became more and more hopeless. On the morning of the third day he thought of a good plan to get rid of his enemy. He asked the king to order all the bells of the neighboring churches to be tolled, while every one in the palace was to cry out loud "Here she comes!" While all this noise was going on, the guanchinango approached the princess, and told the devil that the old woman was coming with her *cintas*. When the devil heard this, he was terribly frightened, and left the princess and disappeared. The next day the guanchinango was married to the princess.

Another story of a similar nature is as follows: Menguita, a king of Cebu, had two slaves, Mabait and Masama. Mabait was honest and industrious, while Masama was envious and lazy. Mabait became the friend of a Duende after having learned that Duendes are not evil spirits, as related in the following manner:

> When Lucifer was an angel, a contest in creating animals arose between him and God. He and his followers were defeated and thrown into hell. Many angels in that contest belonged neither to God's side nor to Lucifer's. They were dropped on the earth. Those that fell in the forests became tigbalangs, ikis, and manananangals; those in the seas became mermaids and mermen; and those in the cities became duendes.

The Duende gave Mabait two or three isabels every day so that the latter could buy what he wanted and was envied by Masama, who succeeded in laying a plot to kill the Duende by enclosing it in a jar covered with a saint's dress. So the Duende implored Masama to free him promising to help him (Masama) win the king's daughter for his wife, by entering into her abdomen where he would talk, laugh, and cry to frighten the princess, the Duende to leave it as soon as he would hear the voice of Masama. Masama would then be proclaimed the healer and victor, and, for that matter, the husband of the princess. But when the devil was already set free, he did not listen to Masama's words so that the princess was not cured. But on hearing Mabait, the Duende left the princess and she was cured. She was therefore married to Mabait.

A woman who happened to interchange some cross words with another woman, who was said to be Mankukulam, struck the latter with a broom, then they separated. Almost immediately after the Mankukulam was gone, the woman fell sick, with sharp excruciating pains in the abdomen accompanied by vomiting. No one could cure this woman until they sent for the Mankukulam who touched the abdomen of the patient, whereupon the broom was vomited out and the patient became well.

The following incantations are usually employed either to cure or prevent snake bites:

1. Oracion Contrad
O Log.
Serapite serminin trebo-
lani Amen.
2. Oracion a contrad vleg
Egusum panis Domine
Amen.

Incantation against Mankukulam.

1. Oracion contrad y
baoanen tan mag
co co lam:
2. Malo Jesu Christo
qui nobis tas qui-
Marian de lo set
Amen.

Incantation against crocodiles.

Oracion nas Juan Bta ed
ed saray buaya

Charm for alleviating pains caused by wounds.

Oracion a para ma
ton day Olot nasogat.

3. When these ceremonies fail to give the expected result, the primitive Philippino administers roots, bark, leaves, or fruits of plants to which intuition, or even mere chance, has directed him. In this way, he learned by experience the use of innumerable medicinal plants. Some of these remedies are not only ridiculous, even filthy, but many of them are rational.

The chief modes of treatment by drugs are simply carrying about a piece of drug, the presence of which is sufficient to prevent or cure diseases; bugha; by massage and rubbing in; by inhalation of fumes; enemas and drinking, or ingestion of medicines.

Red collars or bracelets, made of silk thread, or coral beads, were most commonly used to prevent and cure diseases of children. Among the Bagobos a decorated neckband made of rattan, bearing the name limba, is believed to preserve the wearer from the spitting of blood, from centipede bites and from swollen breasts. Petals of ylang-ylang blossoms, of sampaguita, and other fragrant flowers are strung in necklaces and worn to cure aches and pains, especially about the head. The carrying of anona bark is claimed to be an antidote against the charm of the Mankukulam. The leaves of alibambang, atis, etc., are tied around the head to cure headache.

Bugha is a very common method of treating disease either with chewed buyo alone or combined with some bitter substance, e.g., lunas bundok and anis maskada. In cases of skin eruptions, this treatment consists of buyo or a mixture of it and some other substance which is expectorated on the lesion; while in other maladies it is expectorated on the fingers and massaged into the affected part in a definite direction and with a definite number of strokes, usually three or some multiple of three.

Massage is also a widely used mode of treatment. Galls produced by insects on certain trees are highly esteemed as a cure for sore throat, and thoracic pains, the method being to heat them, and massage them against the aching part. The juice of certain kinds of herbs, e.g., the so-called Saint Mary's grass, scrapings of the roots of malaubi suspended in cocoanut oil, or ruda; and many others, are rubbed into the belly to cure stomach-ache and tympanitis.

The juice of a certain kind of herb that grows abundantly in the rice paddies is used to heal wounds. Scrapings of green bamboo and the downy feathers of a wild bird called candañgañgu are used to stop hemorrhage.

Fumigation with incense sometimes combined with palm leaves that have been sprinkled with holy water on Holy Thursday, is very widely employed to cure or prevent the so-called benat, the fumes being wafted to the patient to smoke out the disease-demon from the body, as among the ancient Assyro-Babylonians and the North American Indians.

The internal remedies are many, most being administered in the form of a decoction or solution. The bile of snakes dissolved in water is used for abdominal and gastric troubles. Roasted lizard, pulverized and suspended in water, is taken internally and is said to cure asthma. Decoction of gauva leaves, anonas, areca nuts, and many others, are used in enemas in diarrhea, and romero leaves with wine in hemorrhoids. The fruit of a vine called bawe-bawe is used in ascariasis. Many other fruits and plants are used for the same purpose. The malakatmon has been widely used both internally and externally, as an infusion in hemoptysis. Malakatmon infusion with cañge (rice infusion) is prescribed against eruptions. The bark of champaca is used as an emmenagogue and to combat intermittent fever. Decoction of dita, makabuhay, ampalaya and other bitter substances are also used in intermittent fevers.

Infectious diseases, such as smallpox, measles, typhus and typhoid fevers, have been recognized and isolated. Vaccination with the pus of those suffering from smallpox (variolation) has been practiced by the Philippino native. Such contagious diseases as leprosy and cholera have also been recognized and are isolated and treated.

Treatment of snake bites is accomplished by ligature, suction, cauterization, massage, and by internal medicaments.

Ligatures are applied between the wound and the upper part of the bitten limb. The Manunumang or Tawack prefer for this purpose strips of fresh annona bark, to which they attribute antitoxic properties.

Suction is also practised by these healers by means of tanduc, an instrument made of an empty cow-horn; the perforated point is applied close to the bitten part while the poisoned blood is sucked up by the Manunumang or Tawack from the wide end of the horn. Suction by the so-called snake stone is also widely used by the Manunumang or Tawack.

Cauterization by red-hot iron or live charcoal is also employed as a local treatment of snake bites.

Massage is employed for the treatment of snake bites in many localities of the Philippines. It is another mechanical means of causing the free efflux of poisoned blood, especially after the punctured wound has been previously enlarged. Sometimes snake-stones are rubbed over the patient's skin in lieu of massage. Good results are claimed for this treatment if practiced in time, and if the performer uses it in the direction of the circulation of the blood.

INTERNAL REMEDIES

Strycnus philippinensis (P. Blanco) and Ignatia amara (Linnaeus) occupy a prominent place as internal remedies. The seed of the plant known locally under the name of pepita catabalonga is said to possess marvelous powers in counteracting the the pernicious effects of ophidian poison. Father Blanco, in his "Flora Filipina"[4] says:

> Applied to the site of some snake's or other venomous animal's bite (after scarifying the skin with a needle or a lancet, so that the blood may begin to appear) the pepita catabalonga absorbs the poison. This power of dissipating the poison is prodigious and certain, as I have myself witnessed more than once. At the same time that the seed is applied to the bite, the patient is required to drink a tepid infusion of another piece of the seed. This usually does not taste bitter, but when the patient says that it is bitter it signifies that he is already out of danger.

Many species of piper, especially piper nigrum and the piper parvifolium are used by the natives of Mindanaos Island in the treatment of poisonous snake bites. It is claimed that it has marvelous effects that never fail. The fresh leaves and the seeds of the plant are the parts used; the first are rubbed on the wound and the latter, previously powdered, are given suspended in tepid water to be drunk by the patient.

Another medicine recognized as one of the best remedies to neutralize the pernicious effects of snake-venom, is the aristolochia indica and serpentaria; it is abundant in the Philippines, where it is known under the local name of Malaubi, the root of which can be administered in many forms, a maceration in alcohol, gin or rum being regarded as the best preparation.

The vino de nipa, the tuba and basi, fermented beverages prepared by the Philippinos, are also freely used in the treatment of snake bites, as well as other alcoholic drinks, either alone or in combination with such other substances as the above mentioned aristolochia indica, ignatia amara, piper nigrum, etc., under the belief that drunkenness protects against the toxic effects of any serpent poison.

In some parts of the islands, the bitten person is wrapped with a blanket and a sleeping mat; and underneath the house, a fire is built beneath the patient, in order to induce diaphoresis and so eliminate the poison through the perspiration. In other localities, the bitten member of the patient, previously and conveniently wrapped, is buried into the ground, and near him a bonfire is made.

Lard, olive and castor-oils are also used, both externally and internally, in the treatment of snake bite; two or three tablespoons or any of said substances are administered, the patient being subsequently anointed not only on the bitten part, but all over the body as well.

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[4] Ed. 2, p. 61.

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HYDROPHOBIA: FOUR CENTURIES AGO

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THE researches of Pasteur in respect to hydrophobia are epoch-making. He cannot, indeed, be said to have found the immediate cause of rabies, and the world has still to be content with knowing the condition, but he has found a perfect prophylactic. Before his discoveries, science was not much further advanced in respect to canine madness than in the times of the Greek and Roman writers, Hippocrates, Galen, Celsus.

It may be of interest to give the views of that fine flower of the Renaissance, Girolamo Fracastoro of Verona, who wrote in the first half of the sixteenth century, and who was at the very top of his profession.

He gives a description of the disease in man and its treatment in his celebrated Latin prose work published at Verona, 1546, "De contagionibus, et contagiosis morbis et eorum curatione," to which his work in twenty-four chapters, "De sympathia et antipathia rerum" was avowedly written as an Introduction.[1] He speaks of it in the dog in his Latin dactylic hexameter poem, "Alcon, sive de cura canum venaticorum." The precise date of the publication of this poem is uncertain.

In the first book of the prose work of thirteen chapters is a definition followed by a classification of contagions; in the second book of fifteen chapters, chapter x is "De rabie"; and in the third of eleven chapters, chapter IX is "De curatio rabidorum"; the first book may be neglected for the purpose of this article.

DESCRIPTION

At the very beginning Fracastoro* agrees with Galen[2] that it does not occur *per se* except in dogs and with Aristotle that all animals bitten by rabid dogs necessarily become rabid except man alone. This he explains (adding that animals so bitten die) by *feritas* (wildness).

By and through which *feritas* they resemble the dog, while the nature of man is far different from this wildness and resemblance, for which reason man has no immediate *analogia* for taking the contagion. Whence it happens that not all who are bitten even become rabid, but many through the advantage of their natural (*ex se*) temperament either do not contract the disease at all or if they do, they survive.

By an ingenious argument, Fracastoro concludes that the *analogia* in man for the contagion of rabies is not the solid parts but the melancholic humor. *Analogia* means analogy or likeness, and in his work "De sympathia, etc," the author explains that like attracts like: he means, here, that the contagion of rabies is attracted to and finds its proper field of action in the melancholia. He adds that the dog *valde melancholicum animal est* is a very melancholic animal. He is here, of course, implying the current theory of the four humors of the body on the proper admixture, *crasis* or *temperamentum*[3] of which so much of bodily health was supposed to depend; *sanguis* (blood), *pituita* or *phlegma* (phlegm, rheum), *chole* or *cholera* (yellow bile) and *melancholia* (black bile).

Rabies is not contracted from every kind of touch nor by *fomes* nor at a distance; but only when the skin is so lacerated by the dog's bite that blood is drawn just as though the contagion occurs in the blood itself by the contact of the tooth and spume of the rabid animal.

Moreover it creeps so slowly and with such delay that rarely is the infection produced before the twentieth day, generally after the thirtieth, in many not till after four or six months, in some even after a year and some are said to manifest it after five years. I myself have seen a boy who manifested the contagion, eight months after he had been bitten.[4]

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* Lib. II, Cap. x.

This gives Fracastoro an opportunity to philosophize *more suo.*

> Since this contagion is not transmitted by *fomes* nor does it appear in the skin by simple contact but requires actual laceration of the skin, we must consider that the seeds of it are not very viscous (*lenta*) and are perhaps too crass to hide themselves in the foramina and so cannot be agglutinated unless the spume in which the *seminaria* lie is mixed with the blood itself.

The long delay in manifesting itself is due to its field of action, "the melancholia is sparser and frigid and dry and less apt to putrefy, it can preserve the *seminaria* longer."

Pending the manifestation of the disease "no fever is felt, nor any other evil, the patient is ignorant that mischief is latent, and he feels it almost for the first time when it reaches the heart." The reason of this, too, is given:

> This contagion excites no fever except at the very end inasmuch as it is produced gradually (*sensim*) and what evaporates is not carried forthwith to the heart but long after, or it is expelled. It is propagated through part after part to the inside and at length to the praecordia; when it reaches there, it both excites fever and tears the transverse septum and the heart itself and brings on at length furor and death.

In another part of this chapter a vivid description is given of the manifestations *quum ea* (*contagio*) *ad cor pertingit.*

> It strikes the man with incredible torture, the heart and praecordia are torn (*vellicantur*), the sick man can neither stand nor be still but is rushed hither and thither like a madman, he tears his body with his hands, he has a fearful (*immense*) thirst but the greatest affliction is that the patient has such a fear of water and all liquids that he would rather die than drink or be taken to the water. Then, too, he bites others, covering them with spume; his eyes are wild, and at length, worn out, he breathes out his life in misery.[5]

The well-known prodromic symptoms in the dog described by Youatt[6] are explained:

> Dogs are in the highest degree dry (*sicci*) and of adust blood, consequently they are at first trist after the fashion of melancholics, and are solitary: then little by little, the blood heating, they become inflamed against everything, they begin to hate everything, and at length in anger they bite: the eyes are red, the mouth foams, and they are carried into furor.

It may be well to pause here and see precisely what is meant—and that requires us to get into the atmosphere of Fracastoro.

He adopts in his "De sympathia, etc,"* the atomic theory of Democritus and Epicurus "whom our own Lucretius has followed." Every body continually sends off insensible particles, *athomos* or *effluxiones,* like itself. Assume that putrefaction sets in in any body—and in Fracastoro's philosophy every contagion imparts a putrefaction (but the opposite is not necessarily true)—the atoms sent off will be of the nature of the putrefaction; if the putrefaction be but superficial, the atoms will be too few to do mischief, but if it be in the substance (*conclusa*) the case may be different. If, indeed, the effluent atoms are dry they may not agglutinate but will disappear singly. If, however, they are glutinous, they will combine and form *seminaria* (seed-beds) of contagion. These *seminaria* may act at once in a body ready to be infected; or they may be deposited on the surface or within the pores of some substance and thus be preserved with all or much of their virulence for months or even years, to be called into activity as occasion offers. Such substances on or in which the *seminaria contagionis* settle are called *fomites* (singular *fomes,* literally meaning tinder or touch-wood, by Fracastoro also applied to the fuse of a firelock). They are cloth, bedclothes, wood, etc.[7]

Some contagions have a "spiritual species" enabling them to act at a distance, like the lethal "Catablepha" which can kill a man one thousand yards away by its glance.[8]

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*Cap. v.

Seminaria being formed, they are attracted by their like, their *analogia*, and may at once begin their deadly work in the *analogia*. Contagions are of three kinds in respect to infection. (1) All contagions act by contact; (2) some of these also by *fomes*, and (3) a few of these latter also at a distance. Rabies is of the first kind acting by contact only, and that only *sub modo*, because its seeds are very slightly viscous and cannot, therefore, agglutinate on a surface, while they are too crass to be able to penetrate the pores of the skin[9] as most contagions can; consequently to enable the seeds of rabies to agglutinate they must be brought in actual contact with the blood itself. Fracastoro does not indicate that he thought the disease might be conveyed by incidence of the seminaria-bearing spume with the blood in any other way than by the bite of a dog actually lacerating the skin and drawing blood. But his theory calls for the contagion to be conveyed by an application of the spume to the blood and of course we know such to be the fact.

A very curious popular delusion, which I have not met elsewhere, seems to be accepted by the author. He says: "They say (*ferunt*), too, that if anyone who had formerly been bitten by a rabid dog should lie under a sorb tree,[10] he would have a recurrence of the rabies (*rursus in rabiem verti*)." An explanation of this phenomenon is made which I give in full as a good example of scientific reasoning four hundred years ago.

> The fact, then, that those who lie under a sorb tree are turned rabid again, if they were rabid at some previous time, has a similar latent cause, at all events if current statements are to be believed. There is nothing to prevent the vapors which constantly exhale from the tree, somewhat styptic as they are and, if one may say so, melancholic, when they are carried to the man and heated within (*intus calefactos*) to be able to produce the same effect as the *seminaria* of rabies, more particularly in the one who becomes rabid again by reason of the remaining diathesis (*propter relictam dispositionem*).

The cause of the horror of water, etc., puzzles the author:

> Why both the dogs themselves and those bitten by one have such a fear of liquids whence they are called *bidropboui*[11] presents a difficulty, the reason is very obscure. We should not accept what many assert, which even Aetius[12] seems to believe, that they are in such terror of water because it seems to them that they see certain puppies (*catulos*) in the water—for some of those who had begun to fear water, being asked whether there was anything of the kind to be seen, answered that they could see nothing of the sort.[13] But is it the same sort of thing as happens in some other diseases, i.e. a disgust for something or other arising from indisposition of the stomach or tongue which occurs in those seized by rabies? Or is it rather that there is no defect or (abnormal) disposition in the stomach or the tongue for they are thirsty and so far as the tongue is concerned, they even seek liquids, but the defect is rather in the phantasy?
>
> A sign of this is that they desire liquids which they do not wish to look at or to touch even as a drink.
>
> It is perhaps the case (as we have said in the chapters, "De sympathia"[14]) that the phantasy excites memory of some of the things which are wont to cause fear. This may well happen in rabies, for spume is seen around their mouths and especially, their hearts melt (*et corde praecipue liquescunt*), from these a certain phantasy is produced of liquid destroying (*extinguentis*) them, whence arises a fear as often as they see or touch liquids or even hear it suggested to give them liquids.
>
> In the sick, indeed, there is occasioned a phantasy of horrible things from small occasions. As often the sick looking at small figures on the walls, form the impression (*subimaginari*) that they see wolves and dogs, they cry out and order them to be removed and (as we have said in "De sympathia") those things which are dried (*exsiccata*) may desire the humid and may attract it, the form remaining according to nature *per se*, although it is otherwise in act and *per accidens*. Indeed when siccity has proceeded to such an extent that the form no longer preserves its nature but has fallen away from it, then the very dry themselves, not only do not desire the humid, but abhor them as contraries

and renounce them. Just as happens with those near death, when they have such an abhorrence of all food and drink that nothing can be offered them more detestable and horrible than food and drink, since their members have now been deprived of their nature. In the same way, so much is done in rabies by exsiccation that the proper nature becomes collapsed and it looks upon what it was accustomed to receive as suitable and good, now as contrary and horrible; and the phantasy produces not only a dislike of drinking any liquid whatever but an actual abhorrence. It is obvious that those affected by rabies become dried out (*exsiccari*) for they even fall into convulsions from siccity.

This chapter containing the description of the disease ends with the sapient words: "Atque haec de rabie probabiliter dicta sint" (what has been said here of rabies is advanced as probable only).

TREATMENT

In "De curatione rabidorum"* is given the treatment of those bitten by rabid dogs. The chapter begins: "There are certain diseases in which unless help is given on the spot as they make their appearance, all medicine will be too late. Such are carbunculi (which the Greeks call anthrax) and gangrenes—and especially rabies of which we are now to speak." Consequently these diseases should be known to all as well as the remedies which should be exhibited at once.

As though that were not sufficiently terrifying, Fracastoro proceeds:

> In rabies the priests have a better way than physicians; to those who have been bitten when they are brought to them at once, they not only give the consolations of religion but exercising the functions of the medical man and making use of his intruments, they themselves burn the place. Therefore the very first thing that should be generally known is that the bitten part is to be burnt if possible on the spot. It would indeed be better if after the wound is scarified a large cupping glass was applied whereby the virus is extracted and then the wound burnt so deeply that you think the *seminaria* are reached—this observation being borne in mind, that it should be more free where there is much flesh, less so where there are many nerves[15] and veins.
>
> The cautery may be made with glowing iron or silver or gold. If the actual cautery be considered too severe (*nimis impium*) by anyone, you may effect the object by caustic[16] medicaments. When the place is cauterized take care that the crust fall away by a cabbage leaf anointed with butter.[17] In the meantime apply unguents which are at the same time evocative and exsiccant, if by chance there should be any remains of the *seminaria* around the *locus*. All this is to be done at the very beginning. It is not to be forgotten that the *principia*[18] of the disease are very ambiguous and hidden. In some cases the *principium* is extended to two days, in others to four, in some even longer, according as the disease is more or less acute. Therefore it is of importance to recognize the disease and how long the *principium* extends for if the proper remedies are applied during that time, the whole disease will be destroyed. If you think the *principium* already past and the contagion to have effected deep roots (*altius radices*) the *locus* is not to be cauterized because by that means the poison will be carried further in[19] but I advise that you scarify and apply evocant and exsiccant plasters not, however, those producing blisters, but such a preparation as the following:
>
> ℞. Galbani, Serapini, Opopanacis, singulorum unc. *5*. Euphorbii, drac. j., Iridis, Xiridis, Aristolochiae, Gentianae, singulorum dra. j., Nitri Sulfuris, singulorum scrup. ij., Cerae quod sufficit.[20]
>
> As all *seminaria* of contagions infect *materia*[21] analogous to themselves and corrupt it, it naturally follows that in the progress of the disease, part of the *materia* will be made ready for corruption, part actually corrupted. Consequently, it is necessary to proceed with medicaments which prevent putrefaction[22] and also with

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*Lib. III, Cap. ix.

those which evacuate. The best of all the evacuants are the Hierae[23] either those of Archigenes or those called Diacolocynthidos, also Helleborus than which there is nothing better in this affection if it be exhibited in whey (*sero lactis*). Epithymum is also effective. This is true of all medicines that purge the melancholic humor.

The contagion is also prevented by proper exsiccatives, amongst which by reason of its peculiar antipathy, all praise the ashes of burnt river crabs. They equally praise gentian root, taken either by itself or with the said powder in white wine. Some mix in thus (frankincense) of which medicine use is to be made in every stage of the disease. They also recommend the herb, alyssum, which was given its name because it causes a man to be "without rabies" (*a lussos*), the Arabs call it alguasce. Fracastoro here discusses the different opinions among medical men as to which was the true alyssum: rubia, aparine, lilialis, asperula, syderitis Heraclea, herba Sancti Joannis, salvia, false betonica, Heraclea pratensis, and he decides that they would make no mistake in his judgment who employed in rabies whatever may be made of alyssum. The lesser rubia either contused or in a potion with vinegar is as useful against rabies as against serpents; nor would they make a mistake who administered syderitis because that is a marvelous exsiccant. He says: "Aetius praises oxylapathum, which was used by a certain old man externally and internally. This is not, however, the oxylapathum which is called acetosa (for that is oxalis) but that which has the pointed leaves and seeds of the lapatha (docks)."

Rabies in Dogs

"Alcon[24] sive de cura canum venaticorum" is a Latin dactylic hexameter poem of one hundred and eighty verses. In it Fracastoro describes the best kinds of hunting dogs, their training and care including treatment when sick. The dog if bitten by a serpent knows what to do, what grass to seek, how to heal himself without assistance; but these are the directions to follow when he is bitten by a rabid animal:

You must at once yourself add Idaean[25] pitch to rue-leaves and sour wine (*acrique Lyaei*) and apply these medicaments to the injured part. And when a vile scabies feeds on the wretched limbs of your "barkers" (*latrantum*) and foully burns their miserable body, boil wax, abdomen of an ox,[26] tenacious resin and fresh butter slowly with the green leaves of the lentiscus, and anoint the infected members.

But at this time the prudent mind must be specially careful as, inflamed by madness, he now attacks on all sides—out of his mind, he bites his very master and gives an incurable wound. Accordingly, first of all tie him with a strong chain; then moisten the root of the field-rose contused by a heavy stone, with the water of a living spring, so as to present the appearance of a drink made from dark linseed. That taken, they say the dog recovers his senses and becomes again tame, his rabies having disappeared. Some advise wild figs and old lard: others direct ivy-leaves to be softened in boiling water[27] until one part in three is left and feed the rabid quadruped with the leaves themselves and the tepid water at daybreak. But nothing is so effective as to cut out the first seeds of the disease at the very beginning with iron, for at the point where the tongue is seen to be joined to the innermost palate, a poisonous worm in color like native gold, occupies the fauces, and drives the fierce Molossian[28] hounds to madness suffusing the mouth with venom. If one can cut that out with the knife (*ferro*) he will remove the potent cause of so much mischief and the stimulus of furor.[29]

And thus we leave the Renaissance scholar, poet, physician, mathematician, philosopher, whom an admirer truly describes:

> Longe vir unus omnium doctissimus
> Verona per quem non Maronis Mantuae
> Nec nostra pristis invident jam saecula,
> Virtute summam consecutus gloriam
> Jam grandis aero hic conditur Fracastorus,[30]

NOTES

1. My copies are of the Geneva edition, 1637, Typis Iacobi Stoer, and of the very beautiful Venice edition 1584, Apud Iuntas. The latter

presents difficulties to an inexperienced reader from its frequent contractions; the former has many misprints and makes Fracastoro guilty of solecisms of which he was incapable. He was the best Latinist of his age, an age of scholars. The Venetian edition omits the "Alcon."

2. The reference to Galen is in "De locis affectis" (sometimes cited as "Diagnostica," vol. VIII of Kühn's monumental edition). In lib. VI, Galen speaking of affections of the uterus makes this statement in the text. "Whether Rabies arises spontaneously cannot be said to be absolutely settled; few negatives can, and theory is against the supposition; nor if it does arise spontaneously is it certain that it is so in the dog alone."

The reference to Aristotle is in "De Animal."

3. "Crasis" is the Greek "krasis," corresponding to the Latin "temperamentum," both meaning a mixture of two substances in which the constituents lose their identity like wine and water as distinguished from a mixture in which the identity is retained like peas and wheat. This the Greeks called "mixis," in Latin "mistus" or "mixtus." Our words "temperament," "humor," "sanguine," "phlegmatic," "choleric," "melancholy," etc., are the relics of the old theories of humors.

4. Dioscorides (Pedanius or Pedacius) of Anazarba probably in the first or second century, A.D. in "De venenatis animalibus," VII, ii, says that the disease first makes its appearance on the fortieth day after the bite of the dog. Sir William Osler, "Principles and Practice of Medicine," 5th Ed., 1903, pp. 227–8, says from six weeks to two months sometimes three months. He considers the prolongation of the incubation to a year or two years not definitely settled.

5. Osler, *op. cit.*, pp. 228–9, gives three stages:

(1) Premonitory stage (which Fracastoro ignores in man), when the patient is depressed and melancholy, has headache and loss of appetite, is irritable and sleepless with a constant sense of impending danger; the first symptoms of difficulty in swallowing are observable, also a slight rise in temperature and pulse. Fracastoro recognizes this stage in dogs.

(2) Stage of excitement, described not very differently from our author.

(3) Paralytic stage, dumb rabies, lasting from six to eighteen hours. The patient is quiet, the spasms no longer appear, unconsciousness supervenes, the heart's action becomes weaker and death occurs by syncope. This last stage is described by Fracastoro in vivid language: "Ac demum fatigati vitam miserabiliter efflant," and at last, worn out they miserably breathe out their existence.

6. The "Canine Madness" of William Youatt (1776–1847) published in 1830, practically a reprint of articles contributed to the *Veterinarian* must always remain the mine of information on this subject. The author, a distinguished veterinary surgeon, was a competent and careful observer, and had the faculty of expressing himself in clear and unambiguous language. The best pre-Pasteur article on "Hydrophobia" with which I am acquainted is by J. Scoffern, M.B., formerly professor of chemistry and forensic medicine at the Aldersgate College of Medicine, in his interesting "Stray Leaves of Science and Folk-lore," London, 1870, better known half a century ago than at present, but not yet quite out of date.

It must not be forgotten that Pasteur is quite modern. His first inoculation of the human subject for hydrophobia was performed on Joseph Meister, July 7–16, 1885: four children from Newark, N. J., were inoculated by him December 21, completed January 1, 1886, and returned home January 14, 1886, in safety.

7. This is not so very unlike our bacteria, spirillae, etc., but the terminology is odd. Fracastoro does not, so far as appears, accept all the consequences of the theory of Lucretius.

8. Anything that cannot be referred to a material basis is spiritual, and such must be all agencies acting at a distance. The mythical Catablepha (the word does not occur in any of the dictionaries at hand, Greek, Latin, English, French, German, Italian, or Spanish, neither Stephanus nor Du Cange know it), is no doubt the Basilisk ("Catablepha" is regularly derived from "kata," against and "blepo," I look). In his "De sympathia, etc." Cap. IX, Fracastoro answering his own question, "Cur Catablepha hominem ad mille passus conspectum interficiat?" says that its glance is a "spiritual species which is projected to a great distance from itself and on account of the contrariety and antipathy which it has to the spirits of man, it dissolves them and drives them away, whereupon the man dies, too." As like attracts like, so unlike repels unlike. The "spiritual species" of the glance of the Catablepha repel the unlike natural or vital spirits of the man, drive them out from the man and he dies.

9. So long as the insensible particles of a putrefaction are separate, they are harmless. Consequently the particles of a rabies putrefaction being very little viscid and therefore nonagglutinative do no harm outside the body. They require the wetness of the blood to enable them to agglutinate. And they are too large to make their way into the pores of the skin and through them into the blood.

10. The sorb is the *Pyrus domestica*. On this continent we have a near relative, the mountain-ash, of which the European species, *Pyrus aucuparia*, the rowan-tree, had magical qualities in Scotland and elsewhere. Pliny mentions the sorb, "Natural

History," xvi, 18, 30, 74, but says nothing of this peculiarity.

11. The spelling "hidrophoui" is found in both editions, but "u" and "v" are the same letter, the form "v" being used as an initial and capital, "u" in all other cases. The word we should now print is "Hidrophovi."

12. Aetius, 502–575 A.D., a very able Greek physician, often called a quack, wrote much, but chiefly made compilations of the works of others. See Bass, "History of Medicine," Am. Ed., pp. 201–2. Aetius recommended the pimpernel, *anagallis phoenicea*, in hydrophobia. It is said by the American editor of Bass, p. 202, note 1, that "a decoction of this plant in beer is said to be the chief ingredient of Stoy's 'Medicine for Hydrophobia.'" Our common pimpernel, *anagallis arvensis*, is either the same plant or practically indistinguishable.

13. This was a common idea. The very learned editor of Stephanus' "Thesaurus Graecæ linguæ," London, 1824, says, vol. vi, 9336a, that some of those who had investigated the causes of this fear of water consider that the afflicted man imagines that he sees in the water as in a mirror the reflection of himself with a red face, and eyes wild and non-human; but "alii dicunt in iis fieri hydrophobiam, quod canis, a quo morsi sint, imaginem in aqua cernere sibi videantur." Others say that the fear of water is produced in them because they seem to themselves to see in the water, the image of the dog by which they were bitten. He adds: "There are, moreover, those who say that an investigation of this would be idle; that this hydrophobia is nothing else but a kind of insanity from black bile."

It may be of interest to quote here a statement of the famous Lazarus Riverius (la Rivière, 1589–1655) whose *potio Riverii* of lemon juice and potassium carbonate is not yet wholly forgotten, the Parisian *potio effervescens antiemetica dicta Riverii*. I take the following from "The Practice of Physick . . . being chiefly a Translation of The Works of Lazarus Riverius . . ." by Nicholas Culpeper, Physician and Astrologer, Abdiah Cole, Doctor of Physick, and William Rowland, Physician, London, 1678. On p. 38 in the Chapter "Of a Phrenitis or Phrenzie" we read: "So the Philosopher that was bit with a mad dog, and his Imagination began to decay going into a Bath, perceived the false Image of a Dog therein, but his Reason being sound, reproved the error of his Imagination, and made him speak thus: What had a Dog to do in a Bath? and presently he cast himself into the Bath by which means he was delivered from the danger of a Disease called Hydrophobia or fear of Water."

14. In "De sympathia, etc.," Chap. xx is "De admiratione, et ecstasi et risu"; and the author gives many instances of phantasia, imagination, bringing up pictures and occasioning horror, admiration, etc. The reasons are given *more suo*.

15. "Nervi" were more commonly tendons.

16. Fracastoro gives lib. iii, Cap. iii, a list of urentia: caustics, verdigris, auripigmentum, chalcitis, chalcanthum, sublimatum, præcipitatum, etc. [For an explanation of these words see glossary.]

17. Pliny gives the credit of the discovery of the efficacy of a cabbage leaf applied to the spot against the bite of a dog to Epicharmus (*circ.* 540 B.C.) who, the son of a physician of Cos, himself practised medicine for a time and then deserted the profession for comedy. He is said to have written fifty-two or fifty-three comedies. A few fragments are still extant in Athenaeus and elsewhere.

18. "Principium" and "principia" are used very loosely and often ambiguously by Fracastoro. Here they mean the stage of incubation, not Osler's "Premonitory stage."

19. In many places Fracastoro warns against bleeding in certain cases because that would set the blood in motion and carry contagion further in. It is not easy for us to get into the atmosphere of those times when the blood was thought stationary in the veins, the arteries full of air, animal or vital spirits carried along the nerves, etc.

20. For these ingredients and names later in the text see glossary.

21. "Materia" is substance.

22. The chief antiputrefactives of Fracastoro were the resins, pitch, etc.

23. A "Hiera" was a purgative generally containing aloes; we still have "Hiera picra." Many of the old physicians had their own prescription, amongst them Archigenes of Apamaea (48–117 A.D.) mentioned by Juvenal, Satires, vi, 236; xiii, 98; xiv, 252: he was an eclectic and in therapeutics, empiric. The Hiera diacolocynthidos was a compound colocynth preparation. Dunglison's "Medical Dictionary," new ed., Philadelphia, 1874, p. 501, gives a prescription.

24. "Alcon" from Alcon, son of Hippocoön, and one of those who took part in the hunt of the Calydonian boar. He was killed with his father and brothers by Hercules. Apollodorus, iii, 10, sec. 5.

25. From Mount Ida in Phrygia, Oenone's "Mother Ida," the scene of the "Choice of Paris," so fatal to Troy.

26. "Abdomenque bovis," perhaps the udder of a cow as "abdomen porcæ" was "sumen," udder of a sow.

27. A poetical way of saying "boil."

28. About the best hunting dogs were Molossian from Molossia, the eastern part of Epirus. Fracastoro in this poem says:

". . . de stirpe Molossa

Quære canes, Lybicis illis, acresque Britannos."
(Seek dogs of the Molossian kind, with the Lybian and the fierce British.)

29. This venomous worm was known universally, indeed it is still in evidence in the country. Pliny tells us, "Natural History," XXIX, 5, of the worm in the mouth of the dog and called by the Greeks "lutta." If it be excised when the dog is young, the dog does not become rabid. This worm carried three times round the fire, is given to those who are bitten by a mad dog to prevent their becoming rabid. And probably this would be quite as effective as the Talmud's prescription of dog's liver, or Fracastoro's varied remedies—or even Stoy's "Medicine for Hydrophobia," itself.

30. "The one man by far the most learned, through whom Verona need not envy the Mantua of Maro (Vergil) nor our ages the older ones, this our great Fracastorius having achieved the height of glory by his merit, is now the property of the ages."

It should not be forgotten that Verona was also the city of Celsus.

GLOSSARY

Alyssum (from the Greek "a," privative, and "lussa," madness). A plant variously identified. Our alyssum or madwort is either A. maritimum, sweet alyssum, or A. saxatile, rock alyssum, generally the former.

In Fracastoro's time there was much contention among scholars and scientists as to whether Pliny and Dioscorides meant the same plant by the word alyssum. The matter is still unsettled. [My own opinion, for what little it may be worth, is that they did not].

Aparine. Galium aparine, goose grass, cleavers.

Aristolochia. Birthwort; several species are bitter, tonic, stimulant and aromatic, once believed to be emmenagogue and ecbolic.

Asperula. Seems to have been a small variety of aparine, *sed que?*

Betonica. Betonica officinalis (stachys betonica) betony. "False betony" is either St. Paul's betony, veronica serpyllifolia, or water betony, scrophularia aquatica, here almost certainly the former is meant.

Cera. Wax.

Epithymum. Cuscuta epithymum, a kind of dodder or parasitic plant growing on thyme.

Euphorbium. A whole genus of the spurge family is so-called. Here it is Euphorbia cyparissiana (or E. officinarum) cypress spurge.

Galbanum. Bubon galbanum (linn.) or ferula galbaniflua.

Gentiana. A whole family. The officinal gentian is generally known as G. lutea or G. rubra, yellow gentian.

Heraclea. Panax Heraclea, Opoponax.

Herba Sancti Iohannis. St. John's wort, Hypericum pyramidatum.

Iris. A whole family, the flags. Fracastoro means the I. germanica, the common flower-de-Luce or the closely allied species. I. florentina (from which we obtain orris) and I. pallida.

Nitrum. Nitre, impure sodium nitrate, KNO_3.

Opopanax. Panax Heraea.

Rubia. Madder, rubia tinctoria (or sativa). Rubia minor is petty madder, Crucianella.

Salvia. Sage, Salvia officinalis.

Serapinum (or Sagapenum). A bitter red to yellow gum, smelling like garlic, once used as an antispasmodic, obtained from the ferula persica.

Sulfur. Sulphur, native preferred.

Syderitis (Sideritis). Achillea millefolium, common yarrow, nosebleed or milfoil.

Thus. Frankincense.

Xiris. Iris fœtidissima, stinking iris, antispasmodic and narcotic.

MAIMONIDES,* A TWELFTH CENTURY PHYSICIAN

By WALTER MENDELSON, M.D.

NEW YORK, N. Y.

A FOREWORD IN APPRECIATION OF SOLOMON SCHECHTER

[redacted]

THE writer of the following sketch feels that he owes the reader a certain *apologia*. He is only too well aware that he lacks the qualifications for writing authoritatively on Maimonides, for he has no Hebrew, no Arabic no Greek, no Latin, nor any first-hand acquaintance with the philosophic and theologic literature of the Middle Ages. Alas! *Die Zeiten der Vergangenheit sind uns ein Buch mit sieben Siegel*, as Faust says to his *famulus* Wagner, and how far does even he penetrate who may have broken but a few of these seven seals!

The circumstances that inspired the writing of this paper were, however, of so lively and interesting a character to the writer himself through his association with Professor Schechter, that he ventures to think that the following account of this man and his work will also be of interest to the reader.

In 1902 Dr. Solomon Schechter came to this country to assume the presidency of the then newly established Jewish Theological Seminary in New York.

It was my good fortune to be referred to him and to become his physician, and from that time, until his sudden death in 1915, our relations were frequent and intimate.

Schechter was in many ways a remarkable man, remarkable as an authority in his particular line of study, and remarkable because of his interesting personality; and it was with this side of him that I naturally came most in contact.

In his home, and among congenial friends, he shone delightfully. Here, in animated talk, were displayed not only his wide knowledge, but also his broad and liberal sympathy in all things human and cultural. Here shone too, his humor, his wit and his repartee. For his mind was like a sword and would leap forth sudden and bright, and before one was aware one found oneself, and that, too, not unpleasantly, impaled upon the point of his kindly irony. His conversation was of such a quality that it compelled attention because of its brilliant and unexpected turns. All these elements added an interest and a sparkle to the pleasures of an intercourse in which philosophy and erudition were made to mingle with gaiety and laughter.

Dr. Schechter, a Roumanian born, came here from England with a long established reputation as one of the foremost rabbinical scholars. For some years he had held a readership at the University of Cambridge, and a professorship at the University of London. At Cambridge his life was highly congenial, as his friends and associates were such men as Sir James G. Frazer, author of the "Golden Bough," Dr. Eriker Magnussen, the Icelandic scholar, W. D. Buckland, regius professor of law, Rendell Harris, the New Testament scholar, Sir Donald MacAlister, later principal of Glasgow University, and, perhaps most important of all, Dr. Charles Taylor, master of St. John's College, eminent as a Hebrew scholar, and one of the few who recognized the importance of that post-Biblical Jewish literature, to which Schechter himself had devoted so much attention.

It was while he was still at Cambridge, in 1896, that he began those remarkable literary finds the story of which I want to set down here, and which may well be classed as among the romances of literature. As told me at odd times, partly by his wife,

*Read before the Charaka Club, New York

and partly by himself, it came to pass in the manner narrated below.

It seems that the book of the Apocrypha entitled Ecclesiasticus, or The Wisdom of Jesus the Son of Sirach, was known to scholars in the Greek version only, but internal evidence pointed to a Hebrew original. Dr. Schechter had long been interested in this book, and had often expressed the thought (so Mrs. Schechter told me) that, had he but the time and the means, he felt sure he could find an early Hebrew version.

At Cambridge, he had as friends two learned ladies who unwittingly moved in the "mysterious way this wonder to perform." These ladies, two sisters, Mrs. Lewis and Mrs. Gibson, were in the habit of traveling in the Holy Land, and were much interested in collecting manuscripts. About to depart on their annual trip to Palestine, they asked Schechter what they could do for him there. He told them (they themselves were unacquainted with Hebrew) that should they chance to come across any seemingly old Hebrew writings, to procure them, on the chance that they might prove interesting.

On their return, they brought him a small box of manuscripts. These consisted chiefly of leases, bills of sale, and similar business papers, but among them he found, *mirabile dictu*, a fragment in Hebrew of Ecclesiasticus. Great was his excitement, and interest, an interest shared by his wife who was always his sympathetic companion. To her he reiterated the conviction that now he felt more than ever sure that he could find the rest of the manuscript of which the piece he had was but a fragment. (It was not much bigger than the palm of a hand.) He rightly divined that not Palestine, but Egypt was the real source of the writing and that it had come originally from the "genizah" of the old synagogue near Cairo.

A providential illness now came to his aid, and, for his convalescence a sojourn in a warm climate was fortunately recommended. This seemed his great opportunity, and his friend, Dr. Taylor, the master of St. John's College, generously providing the funds, off he set to find this literary needle in an Egyptian haystack. Could anything seem more visionary?

It may be proper here to state that the word *genizah* means a hiding place. All synagogues it appears have some room in which old books, old papers, old worn-out scrolls of the law; all the superseded fragments of ecclesiastical machinery are stored away, and—forgotten. The origin of this custom arose from the desire to prevent anything containing the word, "God" from being profaned by its falling into the discard. But, aside from this pious purpose, it happened, too, that books considered heterodox, or for any other reason, objectionable, were put into those lumber-rooms to get them out of harm's way (possibly also to allow the elect to have a peep at them "unbeknownst").

These old genizahs have, consequently, from time to time, given up rare literary treasures to those who have had the hardihood to work in the dust and dirt and decay of centuries. The genizah of Cairo, or rather of its synagogue, at Fostat (where, as we will learn later, Maimonides lived) was however, particularly noted, and had long been known to students, for manuscripts had, from time to time, found their way out of it, and had fallen into the hands of dealers in antiquities. Hence the genizah of Cairo had become the Genizah *par excellence*.

On arriving at Cairo, so the story goes, Schechter visited first the Grand Rabbi and asked permission to delve into the ruined synagogue of Fostat. The interview was rather amusing. "What do you want to do there?" said the Rabbi. "I want to hunt for old books," replied Schechter. "Are there not plenty of new books?" was the response. Schechter had to admit the incontestable truth of that assertion, but urged that at present his own particular fancy lay only in the direction of old ones.

It ended by his getting not only permission to explore, but to keep all he found!

The genizah was at the end of a gallery and had to be entered by a ladder through a hole in the wall. Of it he says:

> One can hardly realize the confusion in a genuine old genizah until one has seen it. It is a battlefield of books, and the literary productions of many centuries have their share in the battle, and their *disjecta membra* are now strewn over its area. Some of the belligerants have perished outright and are literally ground to dust in the terrible struggle for space, whilst others, as if overtaken by a general crush, are squeezed into big, unshapely lumps, which even with the aid of chemical appliances can no longer be separated without serious damage to their constituents.[1]

Here, in darkness and heat, and amid the dust and confusion of ages, he worked for several months, and at the end sent back to Cambridge, Eng., twenty-six large packing cases of manuscripts, containing, he estimated, no less than one hundred thousand fragments. This great collection, inestimable in its value to scholars, is now deposited in a separate room of the Cambridge University Library to which he donated it, and is known as the "Taylor-Schechter Collection." It has, even now, been only partially explored, but suffice it to say here, that it furnished to Schechter many of the chapters of the lost Hebrew version of Ecclesiasticus, which it was his ambition to find. Subsequent search in other libraries, revealed more fragments, so that a reasonably complete Hebrew version is now possible. It was in 1896 that Schechter made his discovery, and in 1899, in collaboration with his friend Dr. Taylor, there was published a formal edition of the Wisdom of Ben Sira.[2]

In addition to works of a theologic and philosophic character, there was also found a quantity of papers throwing light on the every day life of the Middle Ages, for it should be remarked that this synagogue, once a Coptic church, dated from the year, 1000. There were bills of sale, leases, deeds, marriage contracts (and alas, also decrees of divorce), letters of recommendation to the congregation, begging letters, and intimate and homely papers of all kinds. And, among these, were found some autograph letters of both Maimonides and of his son!

To me it seemed a marvelous thing to have seen the actual handwriting of a man so famous in medicine and so long dead, a man connected in my mind, in a hazy sort of way, with Saladin and, so, with Scott's, "Talisman." It, somehow, with a bound brought the Middle Ages and all the romance of the Crusades to my very door. I could not get the thought out of my mind, and so I took to reading and delving a bit myself. Kind friends at Columbia University helped me in various ways, and thinking that my fellow members of the Charaka Club, and other professional colleagues, might find a history of old Dr. Maimonides of as much interest as I did, I put my thoughts on paper and the following sketch is the result.

But I feel that whatever there may be in it, is all due to Schechter. He had a spring of perennial enthusiasm that was too infectious to be withstood. He had the faculty of interesting you in a subject which before might have been entirely foreign to your thoughts, and for which, you had not perhaps had the slightest liking. For he was a delightful and sympathetic companion, and wherever he happened to pitch his conversational tent, there he evoked that "throwing about of brains," which is the heart of all good talk, and also that humorous badinage that banishes all dullness.

To me he ever seemed "Rabbi Ben Ezra" in the flesh. Had he said: "Grow old along with me, the best is yet to be," I would have deemed it most natural and fitting. Nor would he have found me irresponsive.

MAIMONIDES

To judge a man rightly, his character and his influence, it is not sufficient to narrate the incidents of his life and to record his works unrelated to all else. One must seek to project upon the hearer's mind the social, the intellectual and the political horizon within which the man moved. One should too, if this be possible, indicate the stage of evolution of thought in the world's history in which the particular individual found himself.

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[1] A Hoard of Hebrew Mss. Studies in Judaism, series 2, 1908.

[2] Ecclesiasticus.

When Tennyson lets Ulysses say: "I am a part of all that I have met," he expresses a universal truth; for though it may be given to some great minds to alter and mould the age in which they live, yet all of us, without exception, are the creation of our time. We are the result of the totality of environment, both physical and spiritual, into which we happen to be born.

I shall endeavor therefore, to show how the subject of my paper was influenced by that great moving, breathing and highly interesting world in which he lived. While doing this I hope also to indicate why it is that he has survived in men's minds, while others, far greater in their day and his, and occupying exalted positions, have been all but forgotten except by a few students of history mousing among Arabic manuscripts.

Here at the outset let me say that the picture which I wish to present to you is a mosaic for which other men have furnished all the stones. My task has been, merely, to arrange these stones and to apply the small amount of cement that joins them.

Moses ben Maimon, or to give his name in full in Arabic, Abou Imran Musa 'ben Maimon ibn Abd Allah, was born in the city of Cordova, Spain on March 30, 1135.

He is usually known by the Greek form of his name, Maimonides, and among Rabbinical writers as Rambam, from the letters of his name. He came of a family of scholars. His ancestors (and it is said he could trace his lineage to David) had for several generations been noted for learning and for culture. His father, himself an author of some repute, directed his son's education.

Cordova, "The Queen of Andalusia," had attained to her greatest glory about two hundred years prior to Maimonides' birth, when the great Caliph, Abd-er-Rahman III, by uniting all the Saracen principalities of Spain under his one rule, had made her the capital of his caliphate. Under him and his successors Cordova became the seat of that rich store of Arabic science, literature, art and industry that made Saracenic civilization immeasurably superior to anything found elsewhere in contemporaneous Europe.

When Maimonides was born, Cordova had, it is true, fallen from her high estate. The Arabs in Spain, unfortunately for themselves, had brought with them from Arabia, the interminable feuds that had been the source of those tribal wars which were the chief entertainment of their desert lives. As one writer says: "The very origin of these feuds being long forgotten, they naturally were irreconcilable." Hence it happened that, through internal jealousies, a strong and united government could never be maintained for long, and that the Saracenic power in Spain finally collapsed, more from internal decay and disunion than from actual conquest by its Visigothic Christian neighbors.

The Caliph of Cordova, who reigned about fifty years before Maimonides' birth, had invited, in 1086, a wild and warlike confederation of Berber tribes, known as the Almoravides to help him beat back the Spaniards from the north. These came, and coming stayed, for they liked the land so well that they took Cordova for their own, and conquered those whom they had been invited to help. They were a set of rude fanatics, and under their rule the pre-eminence of Cordova soon declined. It takes some time, however, to destroy a civilization, and when Maimonides was born it is reasonable to suppose that much of the old culture still remained, and, as Jew and Moslem mingled on a footing of friendship and equality, his family must have associated with the best.

This then, was the environment of his early years, and under the guide of Arabic masters, the boy was instructed in Greek philosophy, in medicine and in science, while his father took charge of his religious and Hebrew education.

And here it may be proper to pause awhile and view the historical setting in which he moved, and to glance at the European activities in the twelfth century. For though the hatreds and prejudices which religious differences engender, as nothing else does, had excited a seemingly impassable wall between Christendom and I slam, nevertheless by unseen channels there must have been a certain amount of mental and spiritual interchange, for somehow in all times the great in spirit manage to touch hands And as Europe was affected by Saracenic thought, so too must Maimonides and his compeers have been affected by European culture.

Into the political field we need not go, except to state that out of the anarchy and confusion of the Dark Ages, law, order and stable government were slowly beginning to emerge. The most outstanding activity of the Christian world was the participation in the Crusades. In this attempt, impelled by the highest idealism, however much it may have been marred at times by brutal materialism, Europe sought to efface what was felt to be an affront to Christianity. Men, money and effort were again and again lavishly expended upon an adventure that at the last ended in failure. Nevertheless, the contact with the more refined and cultured civilization of the Saracens paved the way for European culture. Not only many new arts, but, above all, science and philosophic thought were thus introduced.

In Europe at this time theology was predominant. The church held that the function of reason was to be the handmaiden of religion, *ancilla fidei*. Reason was used to explain, to justify, but never to examine critically, still less to controvert, the dogmas of creed. The business of scholasticism was, therefore, to support the church. But the eternal spirit of the chainless mind cannot be confined within metes and bounds, even though these be bolstered by law both temporal and ecclesiastical. Bold thinkers such as Erigena and Abelard and their like raised doubts on theological questions, doubts that naturally were banned by the obscurantism of the times. Reason in Europe was only just beginning to dawn.

In the field of literature the troubadours in the south of France had caught much of the Saracenic spirit, and from Provence there poured forth a stream of gay and joyous songs in praise of love, of the ladies, of chivalry and not infrequently, too, in satire of the clergy.

In art the great outlet was in ecclesiastical architecture, and those magnificent cathedrals of France, England, Germany and Italy were constructed whose beauty and grandeur still enthrall the beholder.

In Spain at this period perhaps the two most outstanding names was that of Avicenna (980–1037), the "Prince of Physicians," whose great work on medicine was still used as a textbook in Europe as late as the seventeenth century, and that of Maimonides' contemporary and townsman, Averroës (1126–1198). The latter by his bold and unorthodox speculations greatly stimulated philosophic thought and discussion, but perhaps his greatest claim to consideration is the fact that he introduced the writings, and with them the spirit of Aristotle to the thinking world. In this way Greek thought, through an Arab medium, and largely, as we will subsequently see, through the influence of Maimonides, was brought to European minds.

But to return to Maimonides. When he was thirteen years old another and greater disaster than its capture by the Almoravides befell Cordova, for the city was taken by the Almohades. They were the puritan sect of the Mohammedans. They came from Morocco, and were bent on reforming Islam, which, to their minds, had lapsed into practices far removed from the teachings of the Prophet. It was they who raised the cry "the Koran or the sword." To them, books, science, art, were all mere snares of the devil to lead man from true religion. They burnt the famous library of the Caliph, El Hakim II and gave nonbelievers the choice between Mohammedanism, death, or banishment.

The Maimon family chose the last, and after wandering for some years in Christian Spain crossed to Africa, and settled in Fez in 1160. Why they chose what might seem to be the very den of the lion is not clear, except, perhaps, that the ruler of Fez at that time was a man who did not trouble himself with the religious views of his subjects so long as they, at least outwardly, conformed to the state religion. This the family evidently did, but the irksomeness of such a life is self-evident.

As the Jews in Morocco lived in an atmosphere charged with suspicion and antagonism, and under conditions in which temptations to forswear the old faith and to embrace Mohammedanism were many and strong, Maimonides while living there wrote a work on apostasy, in which he exhorted his coreligionists to abide by Judaism. Centuries of martyrdom have taught the Jew to be practical, to bend before the storm lest he break, and to feel that generally it is better to live for his faith than to die for it. So we find even Maimonides saying: "If a man asks me: 'Shall I be slain, or utter the formula of Islam?' I answer: 'Utter the formula and live.'"

After remaining a few years in Morocco, the family embarked for Palestine and from there went to Cairo, which henceforth was their home. This was in 1165, when Maimonides was thirty years old. Just three years before, Salah-ed-din, better known as Saladin, had deposed the feeble caliph of Cairo and made himself sultan over Egypt.

Saladin is one of the great romantic figures of his time, and he divides with Richard the Lion-Hearted of England, our interest in Scott's "Talisman." He was not an Arab, but by birth a Kurd, one of that warlike nation that is today the curse of its Armenian neighbors. His father, being governor of Damascus, Saladin was brought up at the court of the Caliph Noureddin. On the latter's death, Saladin, by military and administrative ability, finally succeeded in uniting under his own rule all the various eastern Moslem principalities, till his kingdom stretched from the mountains of Kurdistan to the Libyan desert.

After many conflicts he finally succeeded in taking Jerusalem, which remained a Moslem city from that time down to its capture during the Great War by General Allenby and, such is the irony of fate, by his East Indian Moslem troops! Saladin finally all but forced the Franks entirely out of Palestine, limiting them to a small strip by the sea. It was his ambition to restore the unity of Islam, and in this he succeeded. And all this he did without resorting to the common expedients of his age. Treachery, deceit, ferocious cruelty, the massacre of the innocent and helpless, these traits so common with the Crusaders, were foreign to him. Lane-Poole, the Oriental scholar, sums him up as follows:

> The popular conception of his character has not erred. Magnanimous, chivalrous, gentle, sympathetic, pure in heart and life, ascetic and laborious, simple in his habits, fervently devout, and only severe in his zeal for the faith, he has been rightly held to be the type and pattern of Saracenic chivalry.

Maimonides and his family settled in Fostat, or Old Cairo, situated a short distance from the newer and more populated town. From the moment of his arrival to the end of his life, Maimonides lived in an almost continuous atmosphere of war, for of Saladin's twenty-four years of reign, but eight were spent at his capital, the rest being passed in the field.

The Cairo of the twelfth century was a populous, well-built and cultured city. The many public buildings that still remain testify to the skill and taste of the architects of that day. Among the institutions that then flourished we may note three colleges, devoted to the study of religion, of philosophy, and of the sciences. Saladin's vizier, the Kahdi-el-Fadil, was a learned and enlightened man. Of him it was said that his official papers were noted for the literary elegance of their style. He was wholly in sympathy with the designs of his master, and bent all his energies to carry out his reforms. He soon recognized the worth of Maimonides, making him his own physician, and later causing him to be appointed court physician to Saladin himself.

It can well be imagined that in so congenial an atmosphere as Cairo then presented, Maimonides' deeply studious nature expanded to the utmost. He had written much while in Fez, having at twenty-three years of age completed a work, "The Calculations of the Calendar," which showed much astronomical and mathematical knowledge. He had also begun one of his most famous books, " A Commentary on the Jewish Law." Yet it was in Cairo that his intellect expanded to its fullest and here his literary activities showed their finest products. It may be of interest to note that, for the most part his works though in Arabic, are written in Hebrew characters, just as the Yiddish of today is written. Translations exist in Hebrew, Spanish, Latin, German, English, etc.

It was a firm principle with Maimonides that no man should make money through his religious learning. In this he reminds us of Spinoza, who, though offered a professorship of philosophy, remained during his short life a grinder of lenses in Amsterdam.

Maimonides, when he first came to Cairo, was a dealer in precious stones, and was in partnership with his brother David. The death of the latter, shipwrecked in the Indian Ocean, meant to him not only the loss of a beloved brother but also the loss of all the capital of the business, so that Maimonides turned to medicine as a livelihood, and though he soon became the chief rabbi of the large Jewish community of Cairo, the practice of medicine was his support during life.

We think New York, the city of "watch your step," and "step lively" a very busy place, and that a successful doctor, rushing about in his high-powered car, has about all that he can do. But Cairo in the twelfth century must have been as busy as New York in the twentieth, to judge from the following letter that Maimonides wrote to a disciple and translator of his works, Ibn Tibbon by name, who lived in Provence.

> With respect to your wish to come here to me, I cannot but say how greatly your visit would delight me, for I truly long to communicate with you, and would anticipate our meeting with even greater joy than you. Yet I must advise you not to expose yourself to the perils of the voyage, for beyond seeing me, and my doing all I could to honor you, you would not derive any advantage from your visit. Do not expect to be able to confer with me on any scientific subject for even one hour of the day or night; for the following is my daily occupation: I dwell in Fostat and the Sultan resides at Kahiro; these two places are two Sabbath days' journey [one and one-half miles] distant from each other. My duties to the Sultan are very heavy. I am obliged to visit him every day, early in the morning, and when he, or any of his children, or any of the inmates of his harem are indisposed, I dare not quit Kahiro, but must stay through the greater part of the day in the palace. It also frequently happens that one or two of the officers fall sick and I must attend to their healing. Hence, as a rule, I repair to Kahiro very early in the day, and even if nothing unusual happens I do not return to Fostat until the afternoon. Then I am almost dying with hunger. I find the antechambers filled with people, both Jews and Gentiles, nobles and common people, judges and bailiffs, friends and foes, a mixed multitude who await the time of my return. I dismount from my animal, wash my hands, go forth to my patients, and entreat them to bear with me while I partake of some light refreshment, the only meal I take in twenty-four hours. Then I go forth to attend to my patients, write prescriptions and directions for their several ailments. Patients go in

> and out until nightfall, and sometimes even, I solemnly assure you, until two hours and more in the night. I converse with them, and prescribe for them, while lying down from sheer fatigue; and when night falls I am so exhausted that I can scarcely speak. In consequence of this, no Israelite can have any private interview with me, except on the Sabbath day. On that day the whole congregation, or at least, the majority, comes unto me after the morning service, when I instruct them as to their proceedings during the whole week; we stay together a little until noon, when they depart. Some of them return and read with me, after the afternoon service, until evening prayers. In this manner I spend the day. I have here related to you only a part of what you would see if you were to visit me.

This letter, so full of human feeling and dramatic action, gives a picture of life in Cairo more vivid than volumes of description. And yet, unworthy though the suspicion may be, I cannot help wondering as I read it, if Maimonides feared that his friend, Ibn Tibbon, whom he had never seen, might prove to be an unwelcome guest. Perhaps he dreaded the coming of a too enthusiastic admirer, who might have liked to play the Boswell to his Johnson, and might have stayed for not less than a year.

How, in the face of so much daily routine, he managed to write the large number of works that are credited to his pen, is indeed remarkable. The following are his medical works alone: "Aphorisms from various medical writers," "Commentaries on Hippocrates," "Compendium of Galen's Works," "Translation of Avicenna," "Sanitary Regulations," "Notes on Dietetics for Saladin," "Ethics," "Consultation on Various Accidents," "On Food," "On Medicaments," "On Poisons," "On Haemorrhoids," "On Sexual Relations," "On Gout," "On Asthma," "On Physiology," "On Stomach, Brain," etc.

His work, "Sanitary Regulations," was written for Saladin's successor, Afdal, a weak, silly and sensual man, and he ventured on advice, which though sound, was on that account probably not acceptable. Translated into Latin, it was a popular book in the Middle Ages. Maimonides dwells on the importance of temperance in all things, recommending a philosophic and religious resignation to the inevitable; not to be much elated by good fortune or too much depressed by ill; to observe "virtue" in the Aristotelian sense, namely of taking the golden mean between the extremes of too much and too little.

He concludes:

> For the preservation of health and for length of days, above all moral purity and spiritual activity are necessary, whereas a loose life will bring one quickly to the grave. One must therefore strive to attain perfect self-control. But it is only those who draw that moral strength from philosophy and religion that can attain to such a state.

His book on poisons is perhaps the most widely known of his medical works. It was written by request of the Vizier Kahdi-el-Fadil, and held its own for many centuries. In an interesting German translation[3] I found the following directions for treating poisoned wounds which are as applicable today as they were when they were written.

> The first thing to do is to apply a tight band above the bitten part so as to prevent the poison gaining entrance to the body. While this is being done, an assistant should make incisions in and about the wound, and then, after rinsing one's mouth with oil, or with oil and wine, the wound should be thoroughly sucked, being careful to spit out everything taken into the mouth. He who so sucks the wound should have no sore places in the mouth, nor any carious teeth. Should sucking be impossible, cupping may be resorted to.

Then follows a long list of applications to be made to the wound, of medicines to be taken internally, and of the diet to be observed. Among other external applications, he recommends that a pigeon be split from the front and laid, opened out, upon the wound, and that this be repeated as soon as the pigeon's body has become cold. It is interesting to note that among the negroes of the South, this method is still used for the bites of rattlesnakes and moccasins, but chickens are used in place of pigeons. Who will not say that this method of the day of Maimonides may not have filtered down through the Sudan into the Congo and so been brought by captive negro slaves to America? Although Maimonides advocates many curious applications to be made to the wound (such as crocodile's fat, pigeons', ducks' and goats' dung mixed with honey) yet he is careful constantly to reiterate the necessity for ligation and suction.

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[3] Virchow Archiv, Vol. 57.

He takes up *seriatim* the bite of the viper, the sting of the scorpion, of spiders, bees and wasps. In speaking of the bite of mad dogs, after saying he will not dwell on the symptoms of rabies, for man instinctively shuns a mad dog as he does a poisonous serpent, he describes in a few words the rabic dog: "He shuns his fellow dogs and slinks along the walls of the crooked alleys without barking." This is a brief but graphic description of "dumb rabies," the form prevalent in the Orient today. After describing the usual treatment, he recommends that the wound be kept open forty days, which would seem to show that the long period of incubation of rabies was recognized.

"Of all bites," he says, "that by a fasting man is the worst," and after going into various details, speaks of the gangrene that may result. Probably, in this particular, Eastern conditions are different from Western, for he was an accurate observer.

He takes up the prophylaxis of poisoning, and from the discussion of the changes produced in foods by poisons, one gathers that the practice of removing one's enemies by putting poison in their food was tolerably common. Ox blood he considers particularly poisonous, which recalls the botulism of today. Very curious is his mention of women ridding themselves of objectionable husbands by mixing menstrual blood in their food.

In a period when the use of poisoned weapons in war was supposedly common, I have looked in vain to find any mention of this fact in the translation of his treatise. This may raise a justifiable doubt as to the prevalence of such a practice.

His two greatest works were "A Commentary on the Jewish Law" (the Talmud) and his "Guide of the Perplexed," which will be alluded to later. Suffice it to say here, that aside from the philosophic, theologic, and religious discussions contained in them, there is much information on physics, mathematics, astronomy, anatomy, and especially hygiene. As hygiene and dietetics form an integral part of Jewish law, it is not surprising to find in his "Ethics" that he emphasizes the duty of being healthy. He saw no necessary connection between saintliness and dirt, in great contrast to the hermits and ascetics of Europe and Africa. He dwells on the importance of a sound body for a sound mind and soul. He discourses minutely on the question of diet, the relative nature of foods, the effects of the seasons, the care of the bowels, the importance of sleep and exercise, and the questions of clothing and bathing. Most diseases, he asserts, are the result of overeating, of alcohol, of lack of exercise, and of sexual excesses. Any disturbance of excretion will cause illness. By following his simple rules good health can be assured, provided the body has not been previously weakened by disease, by bad inheritance or bodily defect, or by some epidemic. All this sounds familiarly modern. Though long before Seneca had said: "Man does not die, he poisons himself." More recently Balzac has said: "Man digs his grave with his teeth."

Even more modern in spirit, so modern in fact that they might have appeared in the weekly bulletin of our own department of health, is a list of qualifications he gives that make a city a fit one to live in. The following are some of the requirements: (1) A proficient physician; (2) a skilful surgeon; (3) proper bathing facilities; (4) sewerage; (5) a fresh water supply; (6) a place of worship; (7) a proper school; (8) a scribe or notary public (9) a court of justice; (10) a charity organization.

In medicine Maimonides showed the influence of Aristotle, for he was a rationalist in the sense that he believed in testing all things by the intellect, and while not unmindful of the wisdom of those who had preceded him, and accepting the inspiration of the Bible, yet he was disinclined to accept blindly mere authority for truth, or to rely on precedent rather than on experience. He was essentially a forward looking man, and one of his maxims was, "the eyes are set in the front of the head, not the back." He was opposed to polypharmacy, and would not use drugs he had not himself tested, or that had not been vouched for by good authority. This is what he says of drugs and of treatment in general:

> Now most physicians are greatly in error in that they think that medicine strengthens the health; it weakens and perverts it, and for this reason has Aristotle said that most of the patients who die do so through the medicines of the physician. When the interference of the physician is indicated, his task should be to sustain the patient's strength, and to promote Nature in her effort to repair. Most physicians however act wrongly, and while they think they help Nature, they hinder and destroy her beneficent activity.

Living in an age in which the belief in magic and incantations and in astrology was universal, and in a country where the wearing of charms and amulets was, and for that matter is today, generally practiced, it is refreshing to find that he condemns all these beliefs and customs, and that he ridicules the idea that the particular position of the planets at the moment of a man's birth could have any influence upon the course of his life. When we consider that today many people (and not uneducated ones either), will wear an iron ring, or carry a potato or a horse-chestnut in the pocket against rheumatism; or a rabbit's foot for general "good luck," or that they will "knock on wood" to exorcise the evil spirit who, ever hovering near, may have heard them boast of good health, and how in many parts of Europe the belief in the evil eye, and the wearing of charms against it, prevail with people of low and high degree, when we consider all these things, I say, we can realize how far, how very far, Maimonides was ahead of his and even of our own times.

Maimonides wrote on the etiology of disease. His work "De causis et indiciis morborum" exists in a Latin manuscript (itself a translation from the Arabic) in the libraries of Paris and of Oxford. A commentator remarks of it:

> The very manner in which he undertakes his task in this his greatest medical work, the very fact that seven hundred years before the medicine of today, he already looks upon medicine from the etiological point of view, his search for the causes of illness, points to the man's keen intellect and explains why he was regarded as such a great physician and rose to such fame.

Rightly to estimate this attitude of mind, we must remember that in Maimonides' day, both in Christendom and in Islam, disease was looked upon either as the evidence of the workings of malign spirits, or, in case of pestilence, as the manifestation of displeasure that an ever merciful and loving God visited upon an erring people. This latter point of view not only involved a shocking contradiction of ideas as well as ideals, but was absolutely fatal to scientific inquiry.

Perhaps I cannot better close my account of Maimonides, the physician, than by quoting what his friend, the Arab poet and Kahdi, Alsaid Ibn Sina Almulk, wrote of him:

> Galen's art heals only the body,
> But Abou Amram's the body and soul.
> With his wisdom he could heal the sickness of
> ignorance.
> If the moon could but submit to his art
> He would deliver her of her spots at the time of full
> moon,
> Cure her of the periodic defects,
> And, at the time of her conjunction, save her from
> waning.

I have so far, as is fitting in a medical society, dwelt almost wholly on the medical work of Maimonides, but in the great world of thought it is as a philosopher and as a theologian that he is most noted. I will, therefore, if only for the sake of completing my picture, give a brief sketch of his two principal books. In these works he shows that same keen spirit of intellectual freedom, that desire to test all things by a mind untrammelled by the authority of antiquity, which we have seen is so characteristic of his medical writings.

His most famous work is the "Moreh Nebukim," or "Guide of the Perplexed," written in 1190. It was written in Arabic (but in Hebrew characters as was the custom) and entitled "Dalalat-al-Ha'ivin," and was translated into Hebrew in 1204 by Ibn Tibbon. Of the object of this work Maimonides says:

> I have composed this work neither for the common people, nor for beginners, nor for those who occupy themselves only with the Law as it is handed down, without concerning themselves with its principles. The design of this work is rather to promote the true understanding of the real spirit of the Law, to guide those religious persons, who, adhering to the Law, have studied philosophy and are embarrassed by the contradictions between the teachings of philosophy and the literal sense of the Torah (*Pentateuch*).

Accordingly he seeks to reconcile the conflict between science and philosophy on the one hand, and the Bible on the other. To him there exists no contradiction between the truths that God has revealed and the truths which the human mind has discovered. Miracles, while they cannot always be traced to their actual causes, cannot, he maintains, have been wrought in contradiction to the immutable laws of nature. This was a bold step, for a miracle explained, ceases to be a miracle at all, and hence by implication at least, he denied the very possibility of miracles.

The anthropomorphic conception of the Deity, the God that "numbers the hairs of our head and watcheth the fall of the sparrow," which runs all through the Old Testament, he holds must be taken in a purely allegorical sense. He is at great pains to insist on the incorporeal and purely spiritual nature of God, and those who believe in a personal Providence he regards as little better than idolaters.

"Providence," he claims "reigns in a certain, broad manner over humanity, and holds the sway over the destinies of nations"; but he utterly denies its workings in the single event that may befall the individual. It is the business of the individual, he holds, to know the laws of nature and to shape his behavior in accordance with them; hence the importance to all of the study of the natural sciences and of medicine. "The soul, and the soul only, is immortal, and the reward of virtue consists in its (strictly spiritual) bliss in a world to come; while the punishment of vice is the 'loss of the soul.'"

Through the labors of Avicenna and of Averroës the writings of Aristotle had been made familiar to Arabic thought, and with the writings of Abraham ibn Doud (1110-1180) these ideas became predominant in Jewish thought as well. Maimonides was strongly influenced by the philosophy of Aristotle, a philosophy which brought out in sharp relief the contrast of concepts founded on pure reason, and of those based upon a Scripture held to be inspired. Maimonides, accepts in general both the philosophy and the cosmogony of Aristotle and he tries to reconcile them both with Biblical revelation. At various points he was, however, forced to depart from the ideas of his great master. Aristotle, for instance, assumes that the universe never was created, that it has existed from all eternity. This view was so hopelessly opposed to the account of the creation found in the book of Genesis, that Maimonides was obliged to reject it.

Though classed with the rationalists Maimonides was by no means a materialist. As one of his biographers says:[4] "He not

[4] Yellin, David. Life of Maimonides.

only introduced an intellectual principle, he also applied a spiritualizing principle. The grossness, the materialism of medieval religion could not survive the idealism of the Guide." His work foreshadowed the higher criticism of the Bible of our day, and is considered, I believe, the first attempt at a scriptural exegesis, scientific both in method and in spirit.

As a pioneer in this branch of speculation Maimonides deserves high praise, for that man is truly great who opens up a new and original path for the human mind, even though he himself may not be permitted to travel far upon it. Turgot said he admired Columbus not so much for discovering a new world as for going out to hunt for it on the strength of an opinion.

That new world that Maimonides sought to discover, the world in which dogmatic theology and science should dwell in unity, we know now does not and cannot exist.

For we see what Maimonides could not have seen, that this attempted reconciliation was, of course, a hopeless task, despite the vast store of learning and philosophic acumen that he expended upon it. His was a sincere attempt to bring mental peace and comfort to those "perplexed" ones to whom the work was addressed and doubtless failed not in this object.

That Maimonides was no more successful in actually effecting such a reconciliation, than those who have essayed the task in our own day, was not his fault. Failure lies in the very nature of the problem. The two are, and always must remain, irreconcilable, for the reason that theology seeks to give scientific precision to matters of history, of thought, and of feeling and to such, the scientific method is inapplicable. And as theology, furthermore, deals with subjects which it considers derived from divine revelation to mankind, it necessarily must be infallible and hence immutable; for he who makes no mistakes has no need to change. Science, on the other hand, deals with the properties of ponderable matter, things that can be weighed, measured, felt or seen, never claims infallibility, and is ever ready to change its theories as new facts come to light. Religion, which is too often confounded with theology, has not, and never can have, any conflict with science. For true religion, the religion that transcends all creeds, all churches, all Bibles, is a matter wholly of the spirit, a matter of faith, it is "the substance of things hoped for, the evidence of things unseen," and for the elucidation of this, scientific tests are useless.

The "Guide of the Perplexed" was one of Maimonides' latest works, and though rumblings of the storm of controversy which it aroused were heard before his death and though the storm was anticipated by him, yet it was not for some years after he had passed away that it broke in all its fury. Those who leaned to the literal interpretation of the Bible, the orthodox, were scandalized. They denounced as heretics, and anathematized all who accepted his rationalistic views, and, as seems inevitable in theologic disputes, much bitterness and even bloodshed followed. All of us know, and some of us can remember, the feelings engendered by the publication of Darwin's "Origin of Species," and even today there is a "fundamentalist" recrudescence and that which Macaulay termed "the bray of Exeter Hall" sounds loud throughout the land. So we can picture what occurred in the thirteenth century and later, in regard to the "Guide of the Perplexed." Yet not only Jewish and Arab philosophy was profoundly affected by it, but Christian theologians paid it high tribute. It was early translated into Latin, and in this form was made accessible to the scholastics of the thirteenth century. Maimonides was thus the direct means of introducing Aristotelianism to European thought. And it was this very introduction of Aristotelian rationalism as opposed to theologic dogmatism that raised the same problems for Christian thought that had presented themselves to Judaism, and as the "Guide of the Perplexed" may, from the medieval standpoint, be considered as having solved the problem, the book was freely used by the savants of the day. As Jacobs says:[5]

> It is scarcely possible to exaggerate the influence of Maimonides upon the greater scholastics on some of the most vital points of what may be termed their natural theology. . . . , Alexander of Trales, Albertus Magnus and Thomas Acquinus all use the arguments of Maimonides, as they themselves acknowledge. The genius of Maimonides enabled both church and synagogue to overcome or evade the opposition, and retain allegiance to the Scriptures for another six hundred years.

His other great work is "The Commentary on the Jewish Law." The post-Biblical Jewish writings (the principal one being the Talmud) contain a hugh mass of legal decisions, precepts and practices, mingled with miscellaneous matter of every conceivable kind, such as, medicine, mathematics, agriculture, astrology, anecdotes and even fairy stories. Into this vast brush-heap of knowledge Maimonides plunged, and after ten years' labor emerged from it with a code so systematized and clarified, with the extraneous so separated from the irrelevant as to make of it that clear and workable basis for human intercourse which it has ever since remained for Judaism. It is said that today no edition of the Talmud is published without the introduction by Maimonides. He seems to have done his work for all time.

Maimonides died in Cairo in 1204, in his seventieth year. In that part of the city called Fostat, where he had lived both Jews and Mohammedans observed a period of three days mourning. In Jerusalem, a general fast was appointed and public ceremonies were observed. His body was taken to Tiberias, and his tomb became a place of pilgrimage. All joined in honoring him, and his reputation among scholars has but increased with the centuries.

In considering the work of such a man, one cannot help asking the question, what influence has he had on our own world of thought? It is a matter difficult to measure, and yet when we consider how very modern he was in his methods of thinking, though thoroughly saturated with Greek and Arab philosophy, we cannot but feel that he forms a very real and important link between our day and that splendid array of philosophers and scientists who were the ornament of the ancient world of Greek thought, whether in Athens or Alexandria. He was one of those who held the torch of learning very high, and who helped to keep the light of Knowledge and of Reason burning through the long night of the Middle Ages, until finally it should burst forth into that brightness of the Renaissance which illumines us still.

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[5] Jewish Contributions to Civilization, New York, 1919.

OUTLINES OF THE HISTORY OF MEDICINE IN LOWER CANADA

UNDER THE FRENCH RÉGIME, 1608–1759

By M. CHARLTON

(*Continued*)

THE EPIDEMIC AT ST. PAUL'S BAY

THIS same Badelard received his first appointment under the English régime from Carleton, who made him a surgeon to the garrison at Quebec. He was also surgeon to the Canadian Militia. In 1778 he was instructed by General Haldimand to report upon a certain mysterious disease which had broken out at Mal Baie or Baie St. Paul. Badelard had already been engaged by Carleton to investigate this matter. He visited, not only Mal Baie, but many other parishes where he stayed from one to two weeks and was successful in curing many of those affected.[1] Dr. Menzies, assistant surgeon to the regiment in 1775 preceded Badelard in his investigations of this disease, which had all the characteristics of syphilis. Menzies had already been sent by General Carleton to treat all those afflicted at Mal Baie, but the invasion of Canada by the Americans delayed temporarily the further investigation and treatment of the disease. General Hamilton, after General Haldimand's retirement, again started the clearing up of this matter and sent Dr. James Bowman, surgeon to the 26th Regiment, to visit the country parishes. His letter reads as follows:

Appendix No. 2. Lieutenant Governor Hamilton's Instructions

Sir:

You will in consequence of the authority hereby given you, proceed upon a progress through the several parishes of this Government with the design of administering your advice, and distributing the medicines necessary for the effectual cure of the disorder commonly known by the name of St. Paul's Bay distemper.

You will keep an exact diary of your journey and a correct list of the parishes you shall have visited, with a faithful return of the persons who shall undergo your inspection, distinguishing their age, sex and condition, stating the progress of the disease of each, and procuring (if practicable) a certificate from the respective curates of the number whose cures shall have been undertaken by you. If any objects of distress shall occur to you in this progress, not immediately coming under the designation of the above-named disorder, but wanting immediate relief, the extra expense incurred by the relief of such objects shall be allowed you.

You will endeavor by all means to conciliate the good will of the clergy, who may be at all times so instrumental in aiding your endeavors.

You will in your turn, make enquiry for, and examine into the properties of any medicinal spring, whose waters may be salutary to the inhabitants. You will (if practicable) analyze them, and leave with the curate of the parish where such springs may be found, an account, in writing, of their properties and how they are to be used to advantage.

You will preserve copies of these notes that they may be published upon your return for the benefit of the Province at large.

You will collect materials for composing a complete history of the disorder, to be published when convenient. The medicines and the extra expenses of carriages, postage, stationery, and occasional charges incident to the situation of paupers, the journey, or to the faithful discharge of the trust reposed in you, shall be paid on your having completed the object of your expedition, with the sum of two hundred guineas exclusive of those expenses and charges.

Given at the Chateau St. Louis, Quebec, April 18, 1785.

HENRY HAMILTON, L. S.

Dr. Bowman seems to have been over zealous in his visits. When his returns were made, the Government was rather skeptical as to the number of calls he had made and desired an investigation as to their correctness and to the amount of medicine used. The medicines principally in use were made from zinc, a preparation of hemlock and a large quantity of bark.

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[1] Badelard's report was published by order of the government in the *Quebec Gazette*, but no trace of this ms. can be found. Dr. Ahern does not believe that the copy which is in Laval University and which they claim to be that of Badelard's, is authentic.

Bowman came to Canada after the Conquest as one of the surgeons to the English army. On retiring from the army he settled at Quebec and at the time of his death was assistant surgeon at the Military Hospital earning 7s. 6d. sterling a day; he was also physician to the Hotel Dieu.

During the wet cold season of 1783–4 the crops were a failure and smallpox threatened to become epidemic. The poor were in such want that a subscription was started to relieve them. Drs. Bowman and Destailleux offered their services gratis. On October 20, 1785, Bowman sent the Government a report of the number of his visits of which the following is a copy:[2]

General Report of the Number of Persons Infected with the St. Paul Disease in the Province of Quebec.

Paroisses	Nombre total	Certifié par
St-Pierre		
Ste-Famille		
Québec	6	
St-Jean		
St-François	5	Messire Pinet, curé.
St-Laurent	12	Messire Hamel, curé.
Château-Richer	2	Messire Hubert, curé.
L'Ange-Gardien		
St-Anne		
St-Féréol	7	Messire Derome, curé.
St-Joachim		
St-Thomas	118	Messire Perrault, curé.
Cap St-Ignace		
L'Islet	63	Messire Panet, curé.
St-Roch	15	Messire Verreau, curé.
Ste-Anne de la Grande Anse	28	Messire Lefebvre, curé.
La Rivière Ouelle	64	Messire Panet, curé.
Kaouraska	34	Messire Trutant, curé.
L'Isle Verte		
Baie St-Paul	295	Messire Gagnon, curé.
Petite Rivière	33	Messire Gagnon, curé.
Les Eboulements	39	Messire Gagnon, curé.
L'Isle aux Coudres	9	
La Malbaie	9	
St-Jean-Port-Joli	72	Messire Faucher, curé.
St-François et St-Pierre Riviére du Sud	45	Messire Garault, curé.
St-Valier	35	Messire Garault, curé.
Berthier		
St-Charles et St-Gervais.	231	Messire Sarault, curé.
St.Michel	47	Messire Lacroix, curé.
Beaumont		
Pointe de Lévis	23	Messire Berthiaume, curé.
St-Joseph et St-François.	90	Messire Jean, curé.
Ste-Marie	58	Messire Verreau, curé.
St-Henri	78	Messire Vézina, curé.
St-Nicolas	29	Messire Griault, curé.
St-Antoine	96	Messire Noël, curé.
Ste-Croix et Lotbinière	58	Messire Chauret, curé.
St-Jean, St-Pierre et Gentilly	25	Pére Louis, curé.
Bécancour	31	Messire Dubois, curé.
Nicolet et la Baie du Febvre	58	Messire Brassard, curé.
St-François	6	Messire Lenoir, curé.
Yamaska et les sauvages Abénakis	228	Pére Chrysostôme, curé.
Sorel	56	Messire Martel, curé.
Isle du Pads		
St-Ours	163	Messire Portier, curé.
St-Denis	43	Messire Cherrier, curé
St-Antoine	53	Messire Cherrier, curé.
St-Charles	156	Messire Martel, curé.
Belœil	84	Messire Noiseux, curé.
Chambly, Ste-Thérèse et St-Jean	161	Le Capitaine de Milice.
Pointe Ollivier	89	Messire Picard, curé.
St-Hyacinthe	55	Messire Durouvray, curé.
Contrecœur	24	Messire Kembert, curé.
Verchères	77	Messire Carpentier, curé.
Varennes	64	Messire Duburon, curé.
Boucherville	112	Messire Dufort, curé.
Longueuil	29	Messire Demeule, curé.
La Prairie de la Madeleine	34	Messire Filion, curé.
Blairfindie	116	Messire Chauveau, curé.
St-Philippe de la Tortue.	178	Messire Camelin, curé.
Lachine	14	Messire Galbet, curé.
Chateauguay	30	Messire Dumouchel, curé.
La Pointe Claire	7	Messire Conefroy, curé.
Isle Pérot	3	Messire Douant, curé.
Les Cédres	23	Messire Douant, curé.
Vaudreuil	106	Messire Deguire, curé.
Ste-Geneviève	81	Messire Bisson, curé.
Le Rivière du Chêne	96	Messire Perrault, curé.
St-Martin et Ste-Rose	107	Messire Lemaire, curé.
St-Vincent	54	Messire Renvoyer, curé.
Terrebonne	55	Messire Proust, curé.
La Chenaie	24	Messire Beaumont, curé.
St-François de Sales	43	
St-Pierre des Prairies et Sault-au-Recolet	53	
St-Laurent	17	Messire Beauzèle, curé.
Montréal	24	
Pointe aux Trembles (M)	39	
Maschouche	190	Messire Foucher, curé.

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[2] From Dr. Ahern's account.

Paroisses	Nombre total	Certifié par
St-Jacques et St-Roch	153	Messire Bro, curé.
L'Assomption	83	Messire Petrimoux, curé.
Repentigny	140	Messire St-Germain, curé.
St-Sulpice	65	Messire Loumier, curé.
La Valtrie et La Noraie	62	Messire Archambault, curé
Berthier	248	Messire Pouget, curé.
St-Cuthbert	135	Messire Pouget, curé.
Maskinongé	40	Messire Rinfret, curé.
Rivière-du-Loup (en haut)	133	Père Dominique, curé.
Yamachiche	64	Messire Bartrand, curé.
Pointe-du-Lac	7	
Trois-Rivières	13	
Ste-Geneviève	17	
Ste-Anne et Grondines	45	Messire Morin, curé.
Deschambault	70	Messire Labadie, curé.
Cap Santé	28	Messire Filion, curé.
Pointe-aux-Trembles (2)	4	
Total	5801	
Québec, 20 oct., 1785.		JAMES BOWMAN

Bowman went over the Province again in 1786 and visited 4606 people. In certain parts the sick were more numerous than at his first visit, while in others there was a decrease. The new cases numbered 673, the diminution 124, leaving a total increase of 549 cases, and with the total of the previous year, 5801, there was a grand total of 6350. This made a little more than 5 per cent of the population of the Province, which was about 120,000. There were besides these 90 doubtful cases.

After this inspection Bowman sent in his account to the Government for $12,500, a very large sum when money was worth nearly twice as much as it is today. Then a pound of beef cost from three to eight coppers, according to the quality, a turkey from thirty-five to fifty, a chicken from twelve to eighteen, and a cord of wood from two to three dollars.

This sum of $12,500 comprised the fees of the doctor, five shillings for each sick person visited; the disbursements of $1,992 for a list of sick specified in the district three of his instructions, and the balance of $2,500 for remedies, cost of transport and expenses of all kinds. His fees for attendance were included in the $1,992.

After having made an inquiry the Government refused to pay the amount asked for, alleging that the doctor had exaggerated the number of sick, "that he could not have visited certain parts mentioned in the report," that more often than not his visits were so short that he could not have sufficiently examined the sick, for from his own testimony he would have covered, in 1785, eight hundred leagues in four months; that he had not had two days to give to consultations and to the distribution of medicines to five hundred people in two parishes, separated from each other by several leagues; that in several cases the curés had given him receipts on his promise to send remedies that were never received.

The Government offered him one hundred guineas for his expenses and two hundred guineas for his fee. He wrote two letters to explain and justify his report. The first was written in 1786 after his second tour of the parishes. It was addressed to the Hon. Henry Hope, Brigadier-General, Lieutenant-Governor of the Province of Quebec, etc. The copy I have seen is neither dated nor signed and covered twenty-seven pages of foolscap. The second was written on November 6, 1786, to the Honorable Guy, Lord Dorchester, Governor, and was signed by James Bowman and covered six pages and a quarter. The rest of the correspondence is at the Parliament Library at Ottawa.

In a letter written about 1786, by Dr. Charles Blake (who came to Canada, 1776) surgeon of H. M. 34th Regiment, to the Committee of Council on Police and Population, he draws attention to the fact that much harm followed the too large doses described by Dr. Bowman.

I will now give you such an account of that complaint, which goes by the name of the St. Paul's Bay Disease, as my knowledge can afford. In the year 1776, His Excellency, Gen'l Carleton (Lord Dorchester) had many reports of the prevalence of this disease in most parts of Canada; and that there was a specific virus in it which made it differ from most diseases known. It was supposed from the similarity of its symptoms to be the same disease as that which was known to the Highlands of Scotland under the name of Sibbans or Sivvans. The inhabitants of St. Paul's Bay declared it was received from a Scotch pilot who lived a winter among them thence some called it the *mal écossais*. In other parts of Canada the people have conjectured that it was brought into the country many years ago by a set of Indians who went by the name of Leusticreux. But let its origin be what it will, it is enough for us to know that such a disease occupies too much of every part of Canada from St. Paul's Bay to Machilimackinac.

I was quartered in the town of Quebec in the year, 1776 and finding the disease to be of an alarming nature I offered to visit the places where it prevailed, but being then a surgeon in the 34th Regiment my wish could not be complied with and Mr. Menzies, a mate of the hospital, was sent down to St. Paul's Bay to bring up some of the worst objects for the inspection of the Faculty at Quebec.

After being fixed at Montreal objects presented themselves daily with this disorder and I reported the circumstance to the grand jury, who, I believe, made a representation to the government at Quebec, but I am informed that it was stated to the Council that the disorder was decreasing and in consequence nothing was done at that time. But the disease is always in a progressive state and I beg to inform you now that few parishes are quite exempt from it, and as it has become so general any plan to eradicate it must be on general principles. I have been told by a priest that some have refused to confess that they had the disease, though the being deprived of absolution should be the consequence, but I imagine these prejudices will soon subside if they saw people set heartily about doing them good.

This disease is nothing more than a confirmed syphilis showing itself in different ways in different parts of the body and making anomalous symptoms and appearances accordingly. The habits of the Canadians facilitate its communication in various ways: they use the same cup, drink from the same bucket, often borrow one another's pipe to smoke, chew their infant's food and spit it into their mouths. They constantly spit on their floors and never clean them, and the lower classes are generally regardless of cleanliness. All these circumstances help to communicate and keep up the disease, which may take effect anywhere that the skin happens to be broken.

The disease being of the nature I have stated it gives way to no remedy but mercury, and whatever impositions may be forced on the public mind as to its being a disease, *sui generis*, or whatever mystery may be made about the disorder or the medicine for its cure, I aver that nothing but mercury will cure it. And as it gives way to nothing but mercury, and as this raises an inflammation of some degree, how is it possible that it can be given with safety merely by delivering boxes of pills to the patients for their own administering, and leaving the action of the medicine, as well as the disease, to a precarious issue? It is not only necessary to administer the medicine but the effects and symptoms must be watched by some medical man, and after the medicine has taken effect further attention is required to get it out of the system.

Mr. Sym, an eminent practitioner in Montreal, told me that seven patients had come in one day for admission into the hospital there with swelled heads from the improper use of mercury given to them by the priests agreeable to the directions left by Mr. Bowman.

This may show the Council that an evil exists where they acted with the most humane intentions, and I hope they will consider some other plan.

(*Signed*) CHARLES BLAKE.
Surgeon.

REMARKS ON THE DISTEMPER GENERALLY KNOWN BY THE NAME OF THE MOLBAY DISEASE, INCLUDING A DESCRIPTION OF ITS SYMPTOMS AND METHOD OF CURE AND CHIEFLY INTENDED FOR THE USE OF THE CLERICAL AND OTHER GENTLEMEN RESIDING IN THE COUNTRY.[3]

By ROBERT JONES, SURGEON

(*Printed by Fleury Mesplet, Montreal,* MDCCLXXXVI)

To His Excellency, the Right Honourable Guy, Lord Dorchester, Captain-General and Governor in Chief of British America, Vice Admiral of the same, and General and Commander in Chief of His Majesty's Forces. &c. &c. &c. The following remarks are most respectfully
inscribed,
By
His Lordship's Most Obedient and Most
Devoted Humble Servant, The Author.
Montreal, 25th November, 1786.

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[3] This is a copy of one of the earliest English pamphlets on medicine in Canada. It was photographed for me by the kind permission of Dr. Doughty.

THE ADVERTISEMENT

Hearing that the Government had seriously undertaken some plan for the removal of a disease which has long infested this Province, alarming in its progress and destructive in its effects; I have ventured to publish some remarks on the subject, extracted from notes I have collected during some years past.

As it is a duty every man owes to Society to contribute all in his power to a purpose like this, I hope my professional fellow-citizens and others, will think my attempt justified by this motive alone; and although my long residence in this country, and my situation for some years under Mr. Huntley have afforded me at least an equal opportunity with others of observing this disease, yet I have often wished that some gentlemen of the Faculty more qualified than myself would dignify a subject with his pen which lays a double claim to his attention, as a citizen and as a professional man. To such I have only endeavoured to explain my meaning. It is the gentlemen of landed property and others residing in the country whom I wish to inform, for their use I write and for that purpose I have avoided as much as possible, every technical term, or professional phrase.

As for myself if what I can say may tend to rescue one poor wretch from the disease, or stimulate one rich man to pity and benevolence, I shall be more proud of my endeavours than if they were rewarded with academical honours.

DESCRIPTION OF THE MOLBAY DISEASE

This infectious disorder which was first discovered in the Parish of Molbay below Quebec, has pervaded almost the whole Province of Canada with such astonishing and destructive rapidity, that from the Cedars above Montreal to the place where it was first known, no situation seems exempt; although the inhabitants of some parishes are affected with it in a more general and more virulent manner than others. The Isle of Jesus, and Parish of La Prairie suffer at present in a most severe manner from the pressure of this malady; on Isle Jesus in particular it is not uncommon to see a whole family infected at once, and sinking under its effect, and there is scarcely any house entirely free from it.

The inhabitants of the new settlements in the vicinity of New Johnstown, Cataraqui, Bay of Quenti, &c. are as yet strangers to this destructive disease, happy if these poor people by the care of the legislature through the channel of the medical faculty, may never experience its dreadful effects. In general the first symptom of the disease is a dryness of the throat and fauces, most sensibly felt in the morning, accompanied with a slight heat, but in the beginning unattended with pain (the absence of which is sometimes continued through the whole course of the disease) for some time this goes off on swallowing any liquid, which induces the patient to relieve it by drinking frequently. In about a fortnight small ulcerations are perceived on the tonsils, uvula, vellum pendulum, tongue, &c., which sometimes remain superficial for many weeks, though attended with a very fœtid breath, and slow fever. Then follow chaps in the lips and nostrils with a distillation of acrimonious humour from those parts; the teeth grow carious and the gums spongy, the ulcerations spread till they unite and destroy the substance of the parts affected, the fever increases accompanied either with obstinate constipation or profuse diarrhœa. The limbs waste, although the appetite continues good, often ravenous; the bones of the nose at length grow carious, the hair drops off, nodes appear on the head and shins, the lips swell violently, the stench increases till universal putrefaction ends the existence of the unfortunate sufferer.[4]

The progress of the disease is not alike in all; it is slower in young people of a robust constitution; in those of a scrofulous or scorbutic habit the symptoms are more virulent, and the progress more rapid and more so I think in women than in men.

The absence of pain sometimes during the whole course of the disease is astonishing as I have seen the vellum pendulum, and the uvula entirely destroyed with nothing more of pain than a slight prickling felt by the patient. In regard to the Canadians this is a most unfortunate circumstance; regardless of danger where bodily sensation affords no monitor to alarm them, and where the dread of expense confirms their indolence they seldom apply for medical assistance till the disease has made such havoc that it is sometimes incurable; and when it then admits of a cure it too often leaves the wretched patient to languish the remainder of his life under the united miseries of an injured constitution and a mutilated frame.

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[4] Sometimes, though very rarely the genital parts are affected with ulcers.

Having thus endeavoured with as much accuracy as I can, to describe the symptoms and progress of this dangerous malady, which has by some been confounded with the venereal disease, and by others pronounced to be only a confirmed pox, I shall next attempt to discriminate between these two disorders, and to prove what I myself believe, that they are distinct and separate diseases, differing materially from each other in their cause, mode of infection and method of cure; happy if in the attempt I draw forth the powers of some abler hand to confirm what I advance or proving it groundless to establish a rational opinion by more judicious observations of his own.

COMPARATIVE STATE OF THE MOLBAY AND VENEREAL DISEASES

In drawing a comparative state of the venereal disease with that which is now so incidental to this climate, in tracing the difference, or similarity of their appearance, as well as of their mode of infection and cure, it will be necessary to give some account of the former.

The venereal disease made its first appearance in Europe in the year 1493, being imported into Spain by the ship's crew of Columbus who contracted it among the savages of America on the Island of Hispaniola which they had discovered and brought it from thence to their native country, from whence it is now spread over most parts of the known world.

The first writers on the subject as well as those of our time, differ among each other, in the account of its origin and the means by which it was first contracted; some affirming it to have been a disorder peculiar to the savages of America when discovered; others that it was generated by the brutality of the Spaniards, a number of whom would satiate their cruelty and lust on the body of one unhappy female savage and produced by such a heated violence an infectious matter in the genital parts of the polluted victim; which by communicating itself to the ravishers in some measure punished their crime.

The last opinion seems most probable, as in later times the same cause has produced gonorrhea when it was proved that neither the woman nor any of the men laboured under the disease before. There are two species of the venereal disease, the simple gonorrhea or Clapp, and the confirmed lues or pox, both contracted by coition with an infected person.

The first is local proceeding sometimes from an ulcer in the urethra, sometimes from a diseased relaxation of the glandular parts, and attended with a discharge of mucus, purulent or bloody. This is generally cured by cooling purges, combined with diuretics and often by topical applications alone injected into the urethra.

The other is a general infection of the mass of blood, producing sometimes ulcers and excrescences in the genital parts, sometimes in the throat, and frequently in both, with pains in the limbs, etc. When these symptoms are perceived the patient is said to be afflicted with a confirmed lues or pox. For this state of the disease mercury is a general specific administerative in various doses and forms proportionate to the age, strength and constitution of the patient; and to the virulence and duration of the disease.

The ulcerations in the throat are alike incident to this and to the Molbay disease, which is I believe the chief reason that they are so often confounded together, and when in the latter any accidental ulcers appear on the scrotum or penis, it confirms this opinion; but chancres and warty excrescences, which are a very common complaint in poxes, I have never once seen in the Molbay disease, another reason for this opinion is that mercury which is a well-known specific for the pox is also successful in the other disease, but mercury has been found equally efficacious in guttae serenae, strumous tumours, etc., diseases very different from anything venereal.

But the most unequivocal proof that the pox and Molbay disease are not the same is that the former is always imbibed by impure venereal cohabitation (although it is also possible to contract it by the contact of an ulceration in a diseased person with an excoriation in a sound one) but the latter will frequently remain unimparted by the commerce of the sexes through whole stages of the disease, in the last of which a woman will bear infected children to a husband who remains free from any particle of the distemper, while the innocent offspring perish, the loathsome victims of their mother's misfortune; in the same manner a man will die of the disease while his wife surviving will feel no symptom of it, although perhaps others living in the same house may not escape the infection.

To this it may be objected that assertion is not proof, a position too incontestable to be denied and although I believe that every gentleman of the Faculty who has had an opportunity of observing and a desire of remarking the disease in question, if not misled by prejudice will concur in what I have said, yet to obviate this objection I have subjoined three out of many cases that have fallen within my observation in support of the non-infectious quality of the Molbay disease by the commerce of the sexes.

Case I. Sicard, aged thirty-five years, wife of —— Sicard of the Parish of Sault de Recollet, was attacked in the common way by the Molbay disease. She did not apply for assistance until the uvula and part of the vellum pendulum were destroyed and many large foetid ulcers appeared on the tonsils, tongue, etc. There were also several livid spots on the nose that indicated an approaching mortification; and she complained of a constant pain in the head; in this situation she applied to Mr. Huntley who immediately ordered her on a course of mercury by inunction, rubbing two drachms of mercurial ointment every night and purging it off as it affected the mouth. In about three weeks the ulcers in the throat disappeared, and the pain in the head went off, the skin of the nose also resumed its natural color and the patient was dismissed as cured.

In six weeks all the symptoms returned with redoubled violence, and one side of the nose appeared black. She was then ordered to take a pill every night of two grains of calomel and four grains of extract of hemlock and a powder composed of twenty-four grains of jalap and twenty grains of nitre every fourth morning, in about a week the greater part of the cartilaginous substance of the nose sloughed away but the wound appearing clean and the throat getting better the medicines were continued and in a month she was perfectly cured.

During the whole process of the cure this woman's husband cohabited with her and yet remained uninfected, nor ever betrayed any symptom of the disease.

Case II. Marie Oilette, aged thirty-seven years, wife of Gabriel Oilette, parish of St. Martin, Isle Jesus, applied to me in the winter of 1784, being infected with the Molbay disease. On examination I found her throat and tongue covered with small ulcers, the gums were very spongy and the uvula almost destroyed and the catamenia were irregular (a symptom common in this disease) but excepting sometimes a slight headache she felt no pain. I immediately put her on a course of calomel and nitre, giving her a powder twice a day composed of one grain, calomel and six of nitre intimately mixed and purging it off every fourth or fifth morning with Glauber salts ordering her at the same time to drink plentifully of the decoction, Sarsaparilla. In four weeks the ulcers were quite healed and part of the uvula sloughed away. The pain in the head went off, the catamenia returned and the woman has continued in perfect health. During this time her husband remained uninfected, nor has he ever felt any symptom of the disease.

Case III. Therese Guenaud, aged twenty-five years, wife of Joseph Guenaud, parish of Laprairie, applied to me in the eighth month of her pregnancy, being infected with the Molbay disease. She had several ulcers on the tonsils and vellum pendulum with chaps on the lips and nostrils, eruptions on the body and limbs, loss of strength and inability to sleep; on account of her situation I advised her to defer attempting a cure till after delivery. In a month she was delivered of a male infant that bore evident marks of the infection, the throat and the fauces were covered with ulcerations, the breathing by the nostrils quite restricted, and the lips swollen so as to render it almost unable to suck, this unhappy object languished a week and died of the disease; the mother was then put on a course of calomel and nitre; purging it off as usual and in a month the cure was completed; her husband was with her and remained sound nor has he ever complained of the disorder.

In the three patients above mentioned, as in most others the parts of generation were never in any manner affected with the disease. It may now be asked, what then is the Molbay disease? I answer it is an acrimonious humor of an infectious quality, pervading the animal system and when thrown by an effort of nature on the surface appearing generally on those parts where there is nothing but the scarf skin to obstruct its eruption, communicable sometimes by contact, sometimes by inhalation, often by neither. Let speculative theorists employ their time and talents in tracing its origin and investigating its cause, after a year spent in the successless search they may perhaps own that they would have been better employed in relieving one unhappy object than in enquiring how five hundred became diseased.

METHOD OF CURE

Mercury is the only specific hitherto discovered for the Molbay disease and I believe it never fails, except when the distemper is combined with others and so advanced in its progress, or the patients so aged and weakly as to render it impossible to administer medicines. But we should beware lest in exhibiting this dangerous drug we materially injure the patient's constitution and leave him cured of one distemper at the expense of inheriting a long succession of others.

The most common way of administering mercury is in the form of an ointment compounded of equal weights of quicksilver and hog's lard, rubbed together in a mortar till they are perfectly united and no trace of the quicksilver is visible. Of this the patient rubs from one to two drams on the groins every night till it is imbibed into the skin; the unction is discontinued when it affects the mouth or gums and a dose of salts or jalap given the next day, recommencing the unction the night following and so continuing until the cure is completed. During this process the patient must abstain from spirituous liquors and salted meat, he may be allowed to go abroad and use moderate exercise, keeping himself warm, and his feet dry.

In young and robust habits this is a safe and certain method of cure for the Molbay disease, but in old and delicate constitutions, particularly in women and children, the introduction of mercury into the habit may be dangerous, from its tendency to dissolve the blood, and from the difficulty that arises in expelling it again.

Calomel combined with nitre, seems therefore the most safe and pleasant remedy to extirpate the disease; one grain of calomel intimately mixed with five or six grains of nitre, and administered twice or thrice a day in a spoonful of warm water, drinking after it a draught of some diluting liquid and purging it off every fourth or fifth morning with Glauber salts, will generally affect a cure; the calomel in form of a pill is more apt to purge the patient, without mixing with the blood, combined with nitre it does not fall so readily on the bowels; but if the nitre excites a pain in the stomach (a thing not uncommon) five or six drops of liquid laudanum mixed with each dose will generally remove this complaint. A spoonful of vinegar, mixed with a pint of the decoction of common rose leaves and used as a gargle will clean the ulcers in the throat and if they are very foul two grains of corrosive sublimate dissolved in the gargle will greatly assist. The decoction of the Sarsaparilla which grows spontaneously throughout Canada, made strong, should be drank in the quantity of two or three quarts per day by the patient.

Bathing the feet in warm water is very useful and if the patient catches cold during the cure his whole body should be immersed in warm water. For children of ten or twelve years the same medicines administered in half the quantity is sufficient, and so on in proportion.

When the disease is very obstinate a pill made of three or four grains of extract of hemlock and taken with the calomel is often very beneficial.

These medicines might be purchased cheaply by every gentleman who possesses a seignory and administered by himself within his own circle where a surgeon is not at hand, to the diseased poor.

The gentlemen of the French clergy in like manner might assist their own parishes and be sure their time and trouble would be well repaid, they would be doing the work of their Master Jesus Christ, in imitation of His example they should not only preach but perform charity, else how can they hope for the effects of piety in wretches who are taught to undervalue spiritual consolation because they find it offered when corporeal assistance is denied at a time when their distressed situation perhaps requires the one more than the other.

The gentlemen of landed property also would find a trifling expense amply reimbursed, if not by the gratitude, even by the health of their tenants; more able to labor they would also be more able to pay! I hope there are many to whom this argument will be superfluous. But when the cause of humanity is joined to that of interest, who will not be charitable? Ye therefore who are blessed with health and riches will ye not assist those suffering wretches who are destitute of both! It is from their labour you derive the one and it will be serving Him from whose bounty you enjoy the other.

By this means the Government will be greatly assisted in their endeavour to extirpate the disease without the concurrence of the priests and seigneurs the expense must be enormous and the inconvenience great; by their mutual endeavours without any great expense or any extensive professional assistance the country may yet be recovered from a calamity more destructive than war or famine. The sword, even when most fatal destroys life without the horrors of lingering in pain and poverty, and bounteous nature generally repays a year of famine with a succeeding one of plenty. But disease renders the poor inhabitant unable to guard against the one or take advantage of the other; by stopping its ruinous career this Province under his auspices who formerly long governed it with honor will again be the most flourishing in the world, and the citizens who perceive and the peasantry who feel the advantage will bestow additional blessings on the name of Carleton.

FINIS

Mr. Sulte[5] mentions the different parishes where this disease raged. There is a long and interesting article on Badelard by Mr. Sulte,[6] giving Badelard's[7] description of the disease at Bay St. Paul's.

"Report recommending the payment of a hundred guineas each to Dr. Longman and Dr. Jones for attending the families of the poor afflicted with the late contagious disease in Quebec and Montreal."[7]

A doctor living at Pointe Aux Trembles, D. François Seizor, claimed to have a port containing a remedy for the disease.

Even in these early days charlatanism had commenced to make itself felt in the New World. As early as 1645, mention of this is made in the "Relations of the Jesuits" of one Dubok who was a soldier. He was invited presumably by the Jesuits, to go to Sillery to tend the sick for three or four days, but remained for two months. Dubok does not seem to have been very successful for we are told he left Sillery disliked both by the French and their Indian converts.

Marguerite Dizy, *dit* Montplaisir, was born at Three Rivers in 1663. In 1678 she married Jean de Brieux de Batiscan, who died in 1707. When she first commenced to practice is not known, but in 1720 in a lawsuit between the widow Labissionière and Mme. Langis the following certificate appears:

> Je sousine Marguerite Dizy, chirurgienne de Batiscan certifie à quy il appartiendra que Magdelaine loyal veuve de Labissionière m'est venue trouvé le quatre d'octobere mil sept cent vint sur les neuf à dix heures du soir pleurant et gémissant pour me montré des meurtrissures qu'elle me dit que monsieur et madame Langis Venoist de luy faire à coup de baston et d'un nair de boeuf luy ostan ses vaches qu'elle avait prise en pension je certifie qu'elle était meurtrie et plaine de contusions en fay de quoz jay fait et siné le présun certificat je suis prette d'affirmer sou serman a Batiscan ce onzième avait mil sept cent trente.
>
> Marguerite Dizy Veuve de.
> Brieux.

On the whole this Marguerite Dizy appears to have been a somewhat notable character and not one altogether desirable to judge from the reports of the time. She died in 1730 at Batiscan.

Coming down to the first half of the eighteenth century there was living at Saint Anne de la Pérade Yves Phlem who called himself a surgeon and who acquired a great reputation throughout the colony. In fact, so great a reputation did he acquire that many living at a distance who were ill of different diseases would come and board at his house while he attended to their maladies. But it was in this way that his undoing came. A certain farmer named Jean Bilodeau, living at St. Etienne de Beaumont, was suffering from an advanced cankerous growth. Among those he consulted was Berthier, surgeon to the Hotel-Dieu at Quebec. This surgeon pronounced his disease incurable. Hearing of the fame of Phlem, Bilodeau went to him for further advice. Phlem persuaded him to remain with him and take his treatment saying he thought he could cure him. Bilodeau agreed and went with Phlem to the curé of the parish of Saint Anne to ask him to draw up an agreement between them. The curé in the presence of two well-known witnesses, the Seigneur of the place and the Captain of Militia drew up an agreement as follows:

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[5] *Courier*, August, 19, 1892.

[6] *La Presse*, Jan. 18, 1892.

[7] *Canadian Archives*, 1800.

Le Chirurgien s'oblige de soigner le dit Bilodeau de son mieux jusqu'à, la quantité de temps de 6 mois consécutifs à commencer le 16 sept. 1735, à moins que le dit malade ne soit guéri plus tôt. Le chirurgien, de plus, s'oblige à fournir pendant les six mois toute la nourriture nécessaire, aussi la boisson qu'il luy faudra tant pour la playe que pour celle qu'il luy faudra boire et de plus de blanchir le dit malade, de luy fournir tous autres soins convenables et nécessaires à sa maladie et en outre s'oblige le dit chirurgien envers le dit Bilodeau de tous dépens, dommages et intérêts—d'être assidu a le panser deux fois par jour. Le dit Bilodeau s'oblige luy et tous ses biens meubles et immeubles à lui appartenant, de payer au dit Phlem pour ses peines, soins et fournitures cy dessus dans tout l'espace de six mois, la somme de cinq cents livres: Savoir deux cents livres en marchandises sèches, au prix du magasin, le premier oct. 1735; cent cinquante livres le 1er oct. 1736; la balance, cent cinquante livres en monnoie le premier oct. 1737. Fait au dit Ste-Anne, au défaut de notaire en cette cotte, les jour et an que dessus en présence des dit sieurs susnommés et soubsignés, le dit Phlem, chirurgien et Jean Bilodeau ont déclaré ne savoir signer requis. A. Longval de la Peyrade, Joseph Gouin et J. Voyer prètre avec paraphe.

Il en fut puni, est-il dit dans l'Evangile, par sa privation. C'est dans ces sentiments dont l'appelant et pénétré qu'il auroit cru manquer à son devoir s'il ne s'était rendu utile à ses concitoyens dont il a mérité l'approbation et la protection de Messeigneurs les Intendants qui ont la Police de cette colonie et qui depuis nombre d'années qu'ils ont connaissance que l'appelant y exerce publiquement les fonctions de chirurgien, ne luy ont pas defféndu cependant.

Il n'y avait pas, dit-il, de raison pour empêcher l'appelant de faire les fonctions de chirurgien dans une campagne éloignée de près de 20 lieues de cette ville, hors l'étendue de la Prévosté.

De plus Phlem présenta au Conseil le procès Verbal fait par Jean Pollet, le notaire de l'endroit, d'une assemblée tenue le 22 mars 1737, à Ste-Anne de la Pérade, à laquelle assistaient le curé, le seigneur et tous les habitants de la paroisse pour déclarer leur confiance dans le Dr Phlem et témoigner de sa bonne réputation comme chirurgien. Le Dr fournit aussi un grand nombre de certificats assermentés de personnes qu'il avait guéries de cancers. Entre autres, il y avait celui d'un nommé Grenier, dont le noviciat chez les Jésuites était terminé depuis quatre mois et que ces pères n'ont pas voulu garder parce qu'il avait sur la joue un cancer que Sarrazin et Boispineau avaient déclaré incurable. S'il faisait ouvrir cette tumeur, disait Boispineau l'ancien, il mourrait vite tandis qu'en la laissant faire il vivrait plus longtemps. Grenier part pour Montréal, mais ayant entendu parler de Phlem il arrète à Ste-Anne de la Pérade où encouragé par lui il demeure trois mois et part guéri.

Phlem lui avait fendu la tumeur et avait enlevé une partie de l'os de la joue.

Le samedy, 13 avril 1737—Il y eut assemblée du Conseil Supér. pour rendre jugement dans la cause de Ives Phlem, se disant chirurgien, établi sur le fief de Ste-Anne près Batiscan, appellant de la sentence rendue en la prevoté de cette ville, le 15e mars dernier, comparant, par Me Jean Latour, notaire royal, d'une part, et Marie Turgeon, veuve de feu Jean Bilodeau, vivant habitant de l'Isle et Comté de St-Laurent, intimée, comparante, par Jean LeRoy, d'autre part. Le Conseil met l'appellant à néant, mais condamne la veuve à payer à l'appellant, pour logement et nourriture, de feu Bilodeau, pendant huit nois, la somme de cent-quatre-vingt livres et aussi 30 livres que Bilodeau a empruntées à un nommé Gariépy et que Phlem a payées. De plus le dit Appellant sera tenu de prendre seulement des lettres de chirurgien de Sieur Jourdain Lajus, lieutenant du premier chirurgien du Roy.

Le curé, le seigneur et les habitants de la paroisse de Ste-Anne de la Pérade, qui ont teny l'assemblée susdite sont reprimandés et défense leur est faite de tenir des assemblées semblables sans permission. Les notaires ne doivent pas signer les procésverbaux de ces assemblées.[8]

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[8] Juge et Délibérations du Conseil Supér., vol. xv, p. 47.

Je n'ai pu trouver nulle part que Phlem ait eu ses lettres de chirurgien.

Cela ne l'a pas empeché de continuer à soigner ni meme de prendre des malades chez lui, car on voit que Nicolas Marion meurt chez Phlem à Ste-Anne de la Pérade, en juillet 1738.[9] Paul Desmarets meurt d'hydropisie dans la même paroisse, en 1739, après avoir été soigné par le même.[10]

En 1742, Gabriel Desmaisons est mort, hydropique, à Ste-Anne-de-la-Pérade, sous les soins de Phlem.[11]

After living with Phlem for eight months, Bilodeau died May 10, 1736, and his widow refused to pay Phlem. He carried his case to Quebec and lost it. Phlem appealed this judgment, saying in his appeal that he had been established at Saint Anne where he practiced for more than twelve years as surgeon and that during that time he had given great satisfaction and performed many cures. One of these cures he mentioned was that of a young novice whom the Jesuits dismissed from his novitiate on account of his suffering from a disease of a cancerous nature on his face, and who had been pronounced incurable by Drs. Sarrizin and Baispineau. This young novice had come to him and Phlem maintained that after his treatment the boy had been cured. Phlem said he had opened the tumor and taken away part of the bone of the cheek.

At the commencement of the eighteenth century there was living at Quebec a shoemaker named Gilles François Paris, better known under the name of La Magdelaine or Madelaine. He married in 1702 Marie Louise Charpentier, widow of Pélisson, another shoemaker who had died from grippe which was prevalent in December, 1700. Dr. Timotheé Roussel, Surgeon of the Hotel-Dieu for thirty years, died of that malady in the same month. Madame La Magdelaine was employed as a nurse for in an action she took out against Etienne Charest, September 10, 1714, her husband representing her, appears the following:

> Supplie humblement Gilles François Paris, dit la Magdelaine, cordonnier en cette ville, faisant tant pour luy que pour Marie Louis Charpentier sa femme "Il expose que": L'autonne dernier le Sieur Estienne Charest estait detenu en cette ville par une méchante maladie, dans son lit, bien malade. La femme du suppliant voiant l'épouse du dit Sieur Charest sur le pas de la porte de son logis toute en pleurs luy demande la cause de son chagrin á quoy elle répondit á la femme du suppliant que son Mary estait sauf respec, bien malade du flux, de ventre et que les sirrugiens ne pouvait pas luy donner de soulagement. A quoy la femme du suppliant luy dit: Madame, si monsieur votre époux veut je le guerirari á peu de fres. Ce que voiant elles entrérent dans le logis et parlérent au dit Sr Charest qui luy dit: Madame La Madelaine si vous me guérissez je vous donne cent eque dont elle convint et promit de le guérir avec l'aide de Dieu á condition qu'il ne pendrait aucun remède des Sirrugiens á quoy il convint et luy promit devant temoins de Rechef la dite somme de trois cents livres. Même depuis qu'il a esté guery il ast avoué que la femme du dit suppliant l'avait parfaitement guery et qu'il voulait la recompanser, Et, c'est ce que le dit Sieur Charest desavoue aujourdhy avec la somme de vingt trois livres que le dit suppliant luy a fourny en travail et autre chose comme il paroist par son mémoire cy attaché, des quelles Sommes de 323 livres le dit suppliant n'a pu recouvrir paiement quelque demande qu'il en ait pu faire. C'est ce quy l'oblige d'avoir recours á vôtre esquitable justice pour le faire rembourser.

Madame La Madelaine lost her action, as both Charest and his wife denied that there was any agreement between Madame La Madelaine and themselves; and there was in writing nothing to prove their claims, the agreement having been a verbal one. This Charest was a merchant and a tanner and was Seigneur of Lauzon. Roy[12] gives an account of this Charest.

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[9] Tanguay: Dict. Généal., vol. V, p. 515.

[10] Tanguay: Dict. Généal., vol. III, p. 383.

[11] Tanguay: Dict. Généal., vol. III, p. 381.

[12] Ahern, M. J. Historie de la Seigneury de Lauzon, vol. I. Quelques Charlatans du Regime Français Dans La Province de Quebec.

Dr. Adam Mabane, and Other Surgeons

After the surrender of Quebec, the British troops were quartered in the town and the advent of winter brought much suffering and sickness. General Murray was greatly hampered with so many of his troops ill. Exposure to the extreme cold, ill supplied as they were with warm clothing, and the use of too much salt pork and beef brought on the scurvy. Fraser's Highlanders especially suffered from the cold. Fraser's Highlanders or the 78th Regiment under the Hon. Simon Fraser, son of Lord Lovat, numbered eight hundred men entirely recruited by himself, and the gentlemen of the country round added seven hundred more. The battalion was thus formed of thirteen companies of one hundred and five men each in all one thousand and sixty-four men, sixty-five sergants, thirty pipers and drummers. They were a splendid body of men, and many a wonderful tale is told of their bravery and courage during these fights. In 1758 at the capture of Louisburg they were highly distinguished.

At the battle of Sillery, in 1760, one hundred and sixty fell, among them the gallant Capt. Donald McDonald, he who had taken such a distinguished part in the landing at Wolf's Cove.

The regiment was quartered alternately in Quebec and Nova Scotia. At the end of the year a number settled in the Province, from these in 1775 were raised the Highland Emigrants, commanded by Colonel Maclean. This regiment was of great service during the invasion by the Americans.

One of the most notable figures in the medical profession after the conquest was Dr. Adam Mabane, surgeon to the garrison at Quebec since the conquest of the country, later judge and a member of the legislative council. Besides being a noted physician he was a highly cultured man, devoted to the study of history and literature. He was a graduate of the Edinburgh University and came to America with General Amherst's army. Later Dr. Mabane went to Quebec to join Governor Murray. It was owing to the urgent request of the former that he presided over the first civil court held in Quebec. His knowledge of French law was as good as that of English law. On his appointment as judge he received £150 per annum, a sum vastly inferior to what he had made in his private practice. He was appointed by Governor Haldimand head of the military hospital.

In the *Canadian Archives,*[9] a correspondence is carried on between Governor Haldimand and Lord George Germaine in respect to the closing of this same military hospital. There is also a letter from Dr. Mabane on the subject. It would seem as though the enemies of Governor Haldimand had accused him of partiality and favoritism towards Dr. Mabane and that this appointment was not needed, as the hospital was but a useless expense to the Government. In spite of Governor Haldimand's urgent appeal to Lord George Germaine the military hospital was closed. The decision was that there was to be only one general hospital and no garrison hospital at Quebec. Mr. James Fisher, in 1784, succeeded Dr. Mabane as surgeon to the garrison at Quebec.

Below is given the correspondence concerning the reclosing of the military hospital.

Quebec, 23rd October, 1781.

My Lord,

In obedience to His Majesty's commands, signified to me by Your Lordship's letter and enclosures of the 12th of April, I have the honour to acquaint Your Lordship that I have by a letter (of which I enclose a copy), taken the only steps which the Service can at present admit of towards discontinuing the Hospital of this place as a Garrison one, by withdrawing from Mr. Mabane the appointment I gave him of Physician to it. In justice to His Majesty's gracious consideration for me hitherto, I cannot suppose I should have experienced this mortification had Your Lordship been acquainted with the circumstances attending the Hospital in this Garrison, and my appointment of Mr. Mabane. I must therefore attribute it to an unfair representation of them, I cannot more clearly submit them to Your Lordship's information than by referring you to the enclosed letter from Mr. Mabane, which contains literal facts.

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[9] Series Q.v. 19.

I beg leave to add that two years ago I found it most expedient to establish the General Hospital at Three Rivers, as well on account of its centrical situation and healthful air, as that I procured for a trifling rent a Recollet Convent, in every respect suitable for an hospital. This of course becomes, or ought to be, the Residence of the Officers belonging to it; and should the Service require the Hospital to be removed, there is every reason to suppose it must be still farther from Quebec. Without an Hospital at Quebec it is simply impossible in time of war that the Service can be carried on. To do the duties of it no augmentation of Officers has been made, for Mr. Mabane has been established as Surgeon to the Garrison of Quebec since the conquest of the country, and his mate is taken from the General Hospital where he would receive the same pay he does as mate to the Garrison.

In regard to the medicines provided, and which the sick are supplied with, it appears of little consequence whether from England or the General Hospital, but in conformity to orders they shall be drawn from the latter.

I must likewise observe to your Lordship that instead of creating appointments it has been my study to diminish them, which has been manifested in the establishment in question, having taken every opportunity to fill vacant surgeoncies of Regiments from the Hospital, in so much that there are at present barely mates sufficient to do the Duty.

I rely upon Your Lordship's goodness in representing to His Majesty the real state of this affair and on His gracious favour in supporting the dignity of the Command with which he has been pleased to honour me. I feel more on this occasion than I would otherwise do, as it affects a man whose aid and assistance in support of the King's Government in his Civil capacity, has been of infinite use to me, and whose services have been uniformly devoted to the Crown which may have procured to him many enemies. Mr. Mabane has done the duties of Surgeon since his appointment of Physician, as before—and I was as much induced to promote him to that rank to obviate difficulties I saw rising, as from a sense that his long service meritted both the rank and pay—but his having civil employment and my aversion from increasing the Public Expense prevented the latter, which from the same motives was never desired by him.

I have the honour to be, with the greatest Respect and Esteem,

My Lord,

Your Lordship's most Obed't and most
humble Servant, Fred. Haldimand.

The Right Hon'ble
Lord George Germaine.

Endorsed: Quebec, 23rd October, 1781.

Quebec, 20th September, 1781.

Sir,

The Right Hon'ble Lord George Germaine having signified to me His Majesty's pleasure that a Special Hospital for the Garrison of Quebec should be discontinued, my appointment to you of physician to the same is of course revoked. I have therefore to desire that you no longer consider yourself in that capacity, but return to your former duty as Surgeon agreeably to your Commission from the King. It is not thought necessary that your requisition for medicines should be complied with; you will therefore make application to the General Hospital for such medicines as may be necessary here, and your mate, instead of being paid as Garrison mate will receive his subsistence from the General Hospital.

(Signed) F. Haldimand.

Adam Mabane, Esqr.

Endorsed: In Gov'r Haldimand's letter of the 23rd of October, 1781 (No. 99).

Quebec, September 21st, 1781.

Sir:

I am sorry to find that the requisition which I had the honour to make last year for medicines for the use of the Hospital for the Garrison hath not been complied with. There has been a Surgeon of Quebec ever since the year 1763. In time of war, or in case of any extraordinary sickness amongst the Troops in time of peace, an Hospital has been always found necessary for the Garrison.

Reinforcements or Recruits for the Army in Canada must arrive at Quebec, hence the propriety of an Hospital there for the reception of their sick, as likewise of those of the provincial armed vessels, prisoners, and others. It has now for eighteen years been under my direction.

As I neither expected nor received pay or any other allowance from your appointment of me as Physician, a promotion which was only declaratory of your Excellency's approbation, I need not have created jealousy or have given offence.

As Surgeons of not four year's standing have been appointed physicians to the Southern Army, eighteen years service and residence in this Country might perhaps give some title to the same promotion, even if it had been attained with pay and emoluments.

The inconvenience attending the mode of supplying the Garrison of Quebec with medicines from the General Hospital at Three Rivers was obvious and the sole motive for making the requisition. I beg leave to observe to Your Excellency that the Insinuation of the list of medicines being calculated for the private practice of a great city, can never be applied to me.

It is well known that ever since Governor Murray, in the year 1764, appointed me to a Civil Office, I have relinquished all private practice for gain. The salary annexed to the Office at that time was £150 per annum. So the acceptance of the Office which my friend and benefactor wished me to exercise, can never be imputed to interested motives, as I can with truth declare that by relinquishing the private practice of my profession, which I thought incompatible with the office of Judge, I gave up four times more than the emoluments which I received from the Crown for that office.

I beg Your Excellency's forgiveness for a warmth and freedom occasioned by what I think an unjust and illiberal insinuation.

I will with great cheerfulness comply with your order to relinquish the promotion and whenever Your Excellency will find it for the good of the Service that there should be no Hospital here, I will with pleasure execute your orders to discontinue it.

I am, with the greatest respect,
Your Excellency's obliged and
Most humble servant,
A. Mabane.

His Excellency, the Governor-in-Chief,
&c. &c. &c.

Endorsed: Letter from Mr. Mabane, to Gov'r Haldimand, dated Quebec, 21st of Sept'r, 1781. In Gov'r Haldimand's Letter of the 23rd of Oct'r, 1781 (No. 99).

Below is an extract of a letter from Lord Sherbourne to General Haldimand; Whitehall, 22nd of April, 1782.

Whitehall, 22nd April, 1782.

Copies of your letter No. 99, which contains your reasons for continuing the Special Hospital at Quebec, and of your correspondence with Mr. Mabane relative to that subject, having been transmitted to the Secretary of War and by him referred to Mr. Adair, I send you enclosed copies of Mr. Jenkinson's answer to the Secretary of State and of Mr. Adair's letter to him; by which you will perceive that the former opinion of the inutility and great expense of that establishment is adhered to, and therefore it must not be continued any longer.

Endorsed copy.[10]

Below is an extract of a letter from Dr. Kennedy, physician and inspector to the Army in Canada, to Mr. Adair.

Quebec Headquarters, October 22nd, 1781.

I am happy to find the opinion I had the honour to give Gen'l Haldimand respecting the inutility and the expense attending two hospital establishments for His Majesty's Service in Canada, met with the Secretary of War's approbation, as it was conformable to what I have known always to be wherever I had the honour to serve and have always looked upon Garrison Hospitals to be peace establishments, which in time of war become objects for military physicians equally with every other detached part of the general hospitals and the attendants upon Garrison Hospitals always reported to the Physician General the consumption of their medicines, and the number of their sick, neither of which has been pursued by the Surgeon of this Garrison who considers himself totally free and distinct; it is inconceivable the expenditure of medicines in that Hospital notwithstanding the few sick submitted to his care; who have generally been left to the care of a mate owing probably to the multiplicity of the Surgeon's avocations which prevent him giving that necessary attendance which is expected. If the private management respecting the purveying for it holds any proportion with the consumption of the medicines, it must be more expensive than can be imagined.

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[10] *Canadian Archives*, Ser. B., XLV, 20.

> Enclosed I send you the different orders for medicines from the General Hospital with their dates annexed, that you may be convinced of the impropriety of such didection.
>
> Endorsed copy of Extract of Letter from Doctor Kennedy, Physician and Inspector to the Army in Canada, to Mr. Adair, dated Quebec, 22nd of October, 1781. (Enclosed in No. 5.)

The short-sighted policy of closing the Hospital was seen some time later when Brock in his position as Commander-in-Chief visited Quebec to see to the repairing of the fortifications. He wrote to the Secretary of the Colonies, "that Hospital accommodation was sadly needed; the sick had to be placed in hired houses of the most miserable description, unfitted to keep out the cold of winter or the heat of summer." Brock urged the immediate construction of a hospital to cost about three thousand pounds.

As to Dr. Mabane, General Haldimand delighted in the society of this "gentle mannered" and cultured physician, and throughout all the political trials of His Excellency, Dr. Mabane remained his devoted friend, one upon whom His Excellency always found he could rely. He had many friends.

> *Wednesday, 30th, St. Andrew's Day.* Col. Simcoe dined with Dr. Mabane at Woodfield near Quebec. He was an army surgeon, came into the Council at Quebec and amassed much money and lived what is called most hospitably, far beyond his fortune.[11]

Woodfield, that house of many memories referred to, was purchased by Mabane in 1769. The former name of Woodfield was Samos.

Mabane died in 1792. His sister, Isabella Mabane, lived in the house until 1805.

> The original house was built on the brow of the hill overlooking the St. Lawrence. It was of stone, one story high, peaked roof—after the style of architecture which prevailed in those days—something the same as that of the manor house at Beauport. Dr. Mabane made many alterations, adding a second story and two pavilion wings connected with the house by corridors.[12]

Dr. Pierre de Sales Laterrière was implicated in 1775 during the invasion of Canada by the Americans of having assisted them. He was imprisoned by Haldimand. In prison he met Maplet and Jotard. He wrote his "Curious Memoirs" to prove that he was innocent of the charges preferred against him. Laterrière was prevented from practicing medicine and surgery.[13] He immediately went to Cambridge (Mass.) from which he obtained a diploma. His graduating thesis was on puerperal fever which was prevalent in 1789 at Boston.

On his return to Quebec, he at once appeared before the Board, August 19, 1789, was examined and obtained his certificate to practice. This certificate was approved by General Dorchester, September, 28th. He died in 1815.

Laterrière's two sons, Pierre and Marc Piscal, became men of importance both in medicine and politics.

Benjamin Scheller and two other surgeons of the same name came with the troops in 1776–1777 and remained in Canada.

Dr. Hugh Bone was a graduate of the Glasgow University and of the Royal College of Medicine in London. He came to Quebec and was from 1823–29 inspector of military hospitals. Dr. James Douglas mentions him in his diary: "During the winter of 1828–9, I suffered from an attack of typhus fever in the most malignant form, and only escaped death at the last hour, by the intervention of Dr. Bone, the Chief of the Army Medical Department."

James Davidson was a member of the Provincial Parliament and of the first Board of Examiners in the district of Quebec, surgeon to the British Militia of Quebec and to His Majesty's Regiment of Royal Highland Emigrants. He married in Montreal, 1779, Dr. Richardson's daughter. At his house No. 1 Market place, Lower Town, he kept an apothecary shop.

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[11] Mrs. Simcoe's diary.

[12] Cosgrain, P. B. *Roy. Soc. Can.*, Sec. 1, 1906.

[13] Act 28, Sec. III, Cap. 8.

George Carter in 1805 obtained the Provincial License. He was physician for many years to the hospital at Three Rivers. Carter was a good friend to the hospital, the nuns liked him well and called him the "clever Dr. Carter." However, their first encounter with him was not much to their taste.

On the 7th of August, 1814, during the war with the United States, Dr. Carter arrived in our parlour and said to the Sister who was present: "Madame, I desire to rent the hospital for our wounded."

"We shall gladly receive and care for the poor soldiers and even if it is inconvenient to yield up our rooms, we have already done it and are ready to do it again."

"That is not what I wish. We shall rent the hospital and I shall have charge of it."

"That cannot be done. At Three Rivers the Ursulines are nursing nuns and exercise their functions."

"Then tomorrow, Madame, you will perhaps be wiser." Having said which he retired but with a menacing gesture. Next day he came again but this day accompanied by the General who himself asked to rent a part of our house. The latter seemed to understand our reasons for wishing to remain mistresses of our own house, and did not insist on more, but the Doctor was fire and flame for at night a thousand rumours were circulating in the town that the Ursulines had refused to receive the sick, etc., etc.

Mr. Coffin came to reassure us and said that it was only the excitement of a young doctor and that the Governor, once made acquainted with the facts, would never permit the disciple of Aesculapius to violate the rights of the people. Dr. Carter soon cooled down and it was he who procured for us a generous grant of 120 pounds. He was still living in 1835.

(*To be continued*)

EDITORIAL

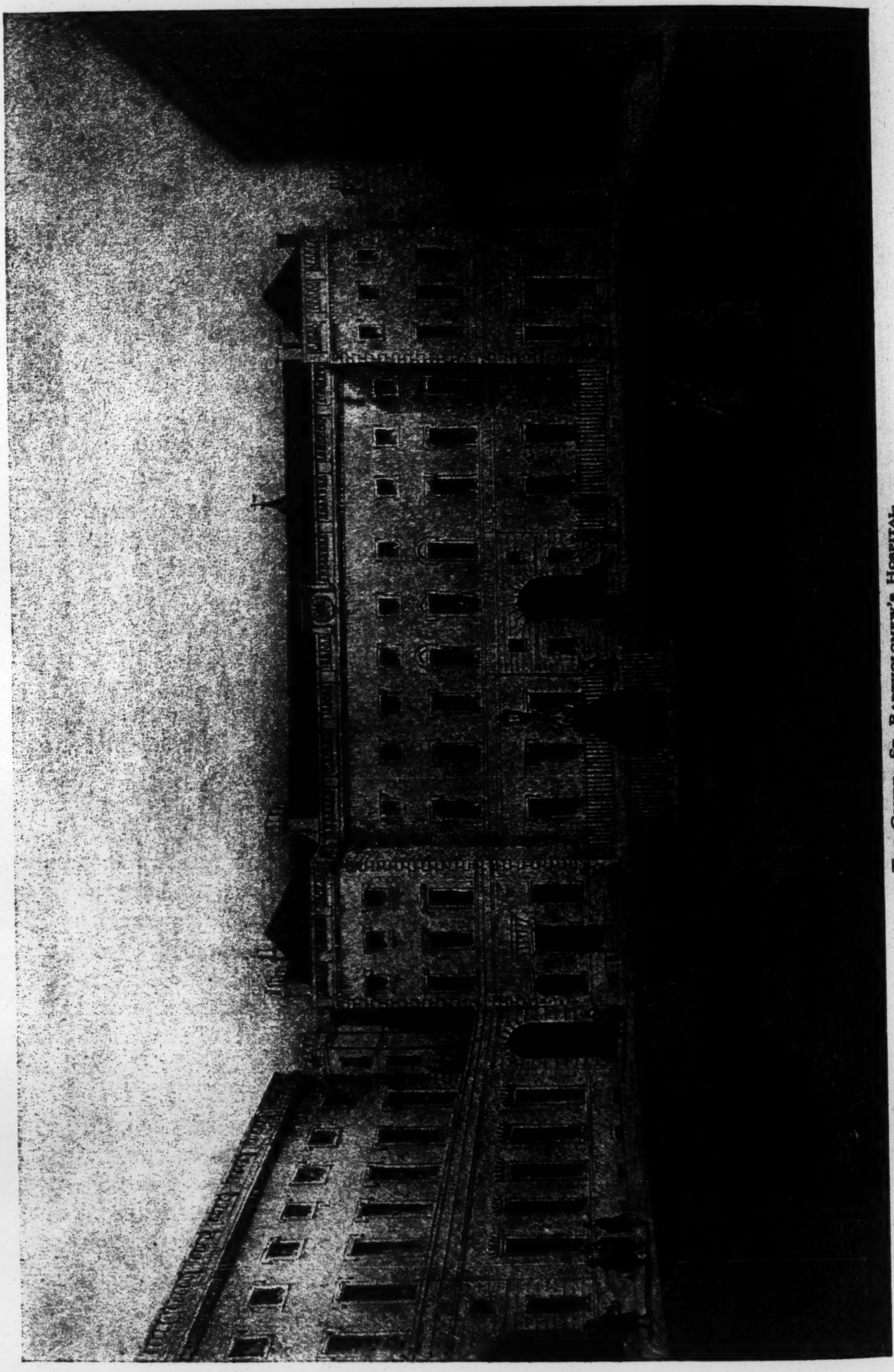
THE OCTOCENTENARY OF ST. BARTHOLOMEW'S HOSPITAL

THE occurrence of the eight hundredth anniversary of St. Bartholomew's Hospital, London, appeals both to the imagination and to the historical sense. This venerable and yet youthful institution has gone on its way through the centuries ministering to the sick and afflicted, deserving the designation of venerable on account of its age, but showing youth in the energy of its administration and its ambition to be advancing with today, not presuming on its antiquity.

The celebration was held from June 5th–8th and was marked by many varied features. The first was a service in the church of St. Bartholomew the Great, the address being given by the Bishop of Chester, a son of Sir James Paget. Next a procession of members of the Augustinian order entered the hospital square and went through a ritual probably similar to that in use when the hospital was founded. After this, representations of various events in the history of the hospital were given reproducing the costumes of the times, including a scene showing Henry VIII restoring the revenues of the hospital. At the Guild Hall the Prince of Wales received the delegates who brought greetings from many parts of the world, Dr. W. H. Welch representing the United States. A series of tableaux illustrated many of the events in the history of the hospital. There was an exhibit of the historical treasures, of which the hospital has many. In lighter vein was a representation of the Bartholomew Fair, opened by the Lord Mayor as had always been the custom. The management of this was entrusted to the students of the college who evidently achieved a great success.

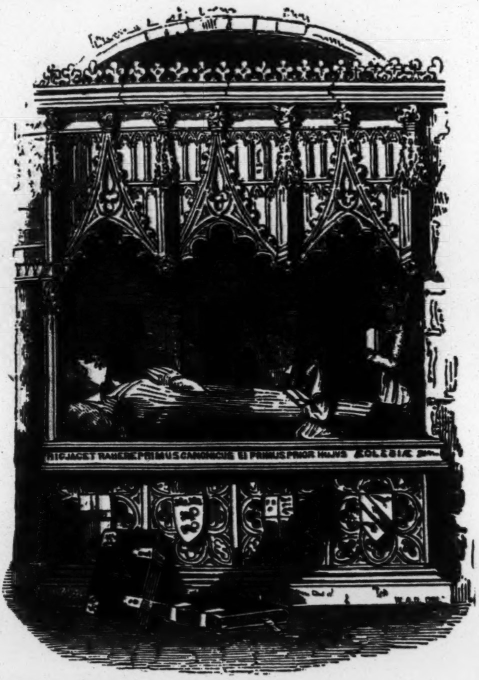
The hospital was founded in 1123 by Rahere who was attached to the court of Henry I as a jester but was also an ecclesiastic, as he held a stall in St. Paul's Cathedral and belonged to the Augustinian order. The account of the founding is unusually complete and is given in a manuscript preserved in the British Museum. This was written probably within fifty years of the foundation and the writer had talked with those who knew Rahere. The death of the heir to the throne in 1120 changed the court atmosphere and whether in consequence or not, Rahere resolved to alter his ways and, as a proper introduction, made a pilgrimage to Rome. Here he fell ill and he considered this as a judgment for his sins. A vow to found a hospital if he recovered was not forgotten when he became well, as is often the case with such therapeutic promisess. Later the resolution was strengthened by a vision in which St. Bartholomew appeared to him with the command to found a church also, which should bear his name. The chronicle clearly sets out the dual purpose of the foundation: the establishment of a hospital and a church, with which naturally a priory was associated.

Rahere must have had considerable influence for he was able to carry his project to completion, apparently largely through the influence of the King and the Bishop of London. He was given a grant of land at Smithfield, which was outside the city walls. The situation was unpromising as part of it was a marsh and the higher ground was used for executions, but in 1123 the hospital and church were established. The purposes of the hospital are clearly set forth: "For



THE COURT—ST. BARTHOLOMEW'S HOSPITAL.

poor diseased persons till they get well, for women with child until delivered, and for the maintenance of the children born there until the age of seven, if their mothers die in the hospital." The church of the priory, St. Bartholomew the Great, has come down to the present day and is the oldest church in London. It is situated near the hospital and contains the tomb of the founder.


HIC JACET RAHERE PRIMUS CANONICUS ET PRIMUS PRIOR HUJUS ECCLESIÆ

TOMB OF RAHERE IN ST. BARTHOLOMEW THE GREAT.

The hospital has occupied the same position since its foundation and except for a short period in the reign of Henry VIII its doors have always been open. Its rights were confirmed by a charter from Henry I in 1123. There are accounts of various gifts in the early days and starting with the fifteenth century there is a full description of the endowments. Its chronicles contain nothing startling until 1536 when the Act of Dissolution closed its doors, the library disappeared and many of the furnishings were removed. The lack of hospital accommodation stirred the London citizens to action and petitions were made to Henry VIII that the hospital might be reopened and the endowments restored. In 1644 the hospital was reopened but not all of the endowments were restored, although subsequently this was done and the King contributed to the revenues. In 1547 a tax for its maintenance was ordered by the city. In 1548 a new system of management was introduced largely under the control of the city government, truly, a rapid change from a religious foundation in 1536 to municipal control in 1548. The city agreed to care for one hundred patients at this time. From this period the records are fairly complete and in 1550 the yearly expenses were about £800.

In 1553 the hospital published a statement of the condition of its affairs and the methods of administration which gives a most interesting account of the internal economy of a hospital at that time. Evidently there had been criticism of the management and the governors wished the citizens to know their difficulties and also asked for suggestions for improvement. The directions as to the duties of every one connected with the hospital are given in great detail. The directions for keeping the accounts are especially thorough, very much more so than for the medical records. Stormy times in the management came later, for although from 1548 the control of the hospital was in the hands of the city authorities, gradually the board became independent and practically controlled the administration. This led to friction and for many years the governing board and the city authorities were in conflict. Finally the two came together and in 1782 an agreement was reached by which the city appointed certain of the governors and the others were elected.

The date at which medical teaching was begun in the hospital is difficult to determine. Students were in attendance certainly by 1660 but instruction had probably been given before this date. The first to give regular courses in anatomy and surgery was Edward Nourse. In 1750 leave was given to perform autopsies and in 1767 the first theater was opened for operations and lectures. In 1791 additions were made to the medical school buildings, the fame of Abernethy having greatly increased the number of students.

Very few of the early names of physicians and surgeons have been preserved. One especially deserves mention, John Mirfield, a contemporary of Chaucer, who was the author of the first medical publication from the hospital, about 1380. He notes the use of sulphur water for scabies, that an injury of the right side of the head might be followed by paralysis of the left side, and makes one of the earliest mentions of the word "smalpockes." Thomas Vicary was the author of the first treatise on anatomy written in English, and Timothy Bright is best known as the inventor of modern shorthand. Naturally the name of William Harvey stands out in the list of physicians. He was appointed in 1609 and held office until 1643, although for some time before this he did not attend regularly. Harvey drew up a list of orders for the conduct of the hospital which throws a strong light on the relation of the physicians and surgeons at that time. The latter were allowed to do very little without the approbation of the physicians. There was an equal number of rules for the surgeons and for the patients. Francis Barnard, celebrated for his learning and magnificent library, stayed by the hospital through the plague when others seem to have fled to the country. He was followed by Edward Browne, a son of Sir Thomas Browne, who left interesting records of the formulas used in the hospital. David Pitcairn (1780) who first recognized the association between rheumatic fever and endocarditis, William Austin (1790), the first lecturer on chemistry and who showed that the "chalk stones" of gout were not composed of chalk, and John Latham (1793) who wrote on diabetes, are among the physicians.

Of the early surgeons, the lithotomist seems to have been held in high honor as he was given a liberal salary and special allowances. The first surgeon of note who deserves credit for having the courage to write in English instead of in Latin was William Clowes (1575). John Woodall (1616) is known for his work "The Surgeon's Mate." Edward Nourse (1745) had among his pupils Percival Pott (1749) whose name is so familiar. But the greatest surgeon of those days was John Abernethy elected assistant surgeon in 1787 and surgeon in 1815. He attracted students in great numbers and from his time the modern influence of the medical school dates. He evidently had an unusual personality and must have been a wonderful teacher. Much tradition has become fixed to his name and fame. William Lawrence and Sir James Paget are also well known.

On Rahere's original foundation, the hospital has endured with steady growth and increasing usefulness and today it is regarded as one of the great hospitals of the world. The medical school has had the reputation of being especially strong on the surgical side but many of the physicians have had equal fame. What a procession has entered its gate in the eight hundred years of its existence! One looking out from that gate could see much of horror and of interest. The scene of executions before Tyburn, where William Wallace was beheaded in 1303, Wat Tyler was slain nearby in 1381, and in the religious persecutions many were burned at the stake. Bartholomew's Fair was held here from 1133 to 1844; among its attractions was an immunity to arrest given for three days to all attending it. At first a great cloth fair, subsequently it degenerated into a time of amusement and license.

One cannot refrain from wondering how many patients have entered its doors in the eight hundred years! From reflecting on the sorrow and suffering that have been endured within its walls! And on the restoration to health of the many who have recovered! There is every reason for "Barts," as it is often known, to continue in its work, "for poor diseased persons till they get well" as the founder specified, for many centuries to come.

Thomas McCrae, M.D.

CORRESPONDENCE

To the Editor:

Lord Byron's lameness has recently provoked such an interesting discussion in two English journals,[1] that the following contemporaneous account of the post-mortem examination of his body will perhaps not be out of place. Unfortunately the name and date of the American newspaper in which it was printed was not preserved (from an advertisement on the back it was presumably in 1824), but the fact that I found it in the scrap-book of my great-uncle (not a doctor) is evidence of the absorbing interest that all details about Lord Byron excited at that time. Although quoted from the *Telegrafo Greco* it is almost identical with the German version which appeared in the Hamburg Magazin, *Die auslandischen Literatur der gesammten Heilkunde*[2] and both of these in turn bear many resemblances to a longer article in the *Westminster Review*[3] which describes Byron's last illness and all his Grecian activities. The newspaper report reads:

"The following are extracts from a series of the *Telegrafo Greco*, published at Missolonghi to the 16th of May:"

Missolonghi, May 2.

The clergy proceeded in a body this day to the house where the remains of Lord Byron lay, in order to take into their keeping and remove to the church of San Spiridion, the heart, brains, etc. of the deceased, which had been left to the care of the city of Missolonghi. The city made a solemn request to Count Gamba (the friend of Lord Byron) for permission to erect a monument to the memory of their benefactor and illustrious fellow citizen. His Lordship had already accepted the freedom of the city. Count Gamba felt it his duty to deposit his noble friend's remains in the care of the city, until they might be reclaimed by his relatives.

Two chests were prepared for the occasion, and after being examined were sealed by the magistrates. In one of them was contained the body, and in the other the heart and brains of the noble defunct. They were removed by four officers of his brigade to the bark which transported them to Basiladi, and thence into a larger vessel to be conveyed to Zante. The whole of the noble Lord's brigade was drawn out in front of his late residence, and along the shore of the sea. The convoy was accompanied by the Prince A. Maurocordati, the Primates, the Military Commandants, and an immense concourse of people, whose countenances and manner bore testimony to their sorrow at taking this last farewell of their benefactor and fellow citizen. As soon as the corpse was removed to the bark, it was saluted by discharges of musketry and artillery. The cannon of his brigade, drawn up along the coast, saluted with twenty-five minute guns; nine were discharged from the battery; and three from the fort of Basiladi; making in all thirty-seven, the number of years the noble defunct had lived. What a melancholy contrast to the joyous salutes which four months previous had hailed his arrival in Missolonghi! One consolation, however, remains; the good he has effected will not be lost—the seeds he has sown with such alacrity and industry for the benefit of Greece, will yet produce a noble harvest. The most glorious monument which can be raised to him will be the feelings of gratitude and love which remain stamped in the heart of every Greek and friend of humanity.

In the bark which transported the noble Lord's remains to Zante were his friend Count Gamba, two other officers of his brigade, Captain and Adjutant Hesketh; Lieutenant Winter; his private physician, Dr. Brown; his faithful valet, Fletcher, who had served him more than twenty years, and his domestic, Batista Fulchiere. In two other barks followed his horses and all his effects, under the care of his secretary, Signor Lega Zambelli. The Government sent likewise two gun-boats to accompany them.

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[1] Lord Byron's Lameness. *Brit. M. J.*, March 31, 1923, pp. 558–564.

Cameron, H. C. An Address on the Mystery of Lord Byron's Lameness. *Lancet*, March 31, 1923, p. 78.

[2] 1827, XIII, 336.

[3] 1824, II, iii, 225.

The following account of the opening of Lord Byron's body, and the appearances it exhibited, is given by the professional gentleman to whom that office was intrusted:

1. The bones of the head were found to be excessively hard, and the skull was without the slightest sign of suture, like that of an octogenarian. It might have been said to consist of a single bone without *deploës.* (*Sic*)
2. The dura meninge (*Sic*) was so firmly attached to the internal surface of the cranium, that it required the repeated exertions of two strong men to separate the outer bones from it. The vessels of this membrane were greatly distended and completely full, and it was united to the pia mater in different parts, by some membranous filaments.
3. Between the pia meninge and the furrows of the brain, a great many bubbles of air were found with drops of lymph adhering in several places to the pia meninge.
4. The grand falx of the brain was crossed with membranous filaments, which attached it firmly to both the hemispheres; it was likewise extremely full of blood.
5. The cerebral medulla was full of minute blood-vessels of a bright red colour, and very much swoln. Under the pons varolius at the base of the hemisphere, in the two superior or lateral ventricles, there was found an extravasation of about two ounces of bloody serum; and at the bottom of the cerebellum there was a similar expansion, the effects of a severe inflammation of the brain.
6. The medullary substance was in much greater proportion than is common in the cortex, and was very firm and consistent. The cerebrum and cerebellum, without any of the integuments, weighed about six medical pounds.
7. The impressions or furrows of the blood-vessels, in the internal part of the skull bones, though small, were much more numerous than usual.
8. The lungs were very fine, perfectly sound, but large to a size almost gigantic.
9. Between the pericardium and the heart there was an ounce of lymphatic water. The heart was more ample and voluminous than ordinary, but its muscular substance was very relaxed and fibreless.
10. The liver was smaller than the natural size, as were likewise the biliary vessels, which, instead of bile, contained air. The intestines were distended with air, and of a deep yellow colour.
11. The veins were very large and healthy, and the urinary vessels comparatively small.

From this examination it was unanimously concluded, by the medical gentlemen who attended it, that if Lord Byron from the commencement of his illness had consented to any loss of blood, as his private physician repeatedly advised, or even if at a more advanced stage of the disorder he had yielded to the pressing solicitations, of his medical advisers, to allow a copious bleeding, his Lordship would not have fallen a victim to this attack. From the statements marked 1, 8, 9, it may be confidently asserted that his Lordship could not have lived many years, from his extreme susceptibility of disease, either through the strength of his passions, his excessive occupations, or even through his utter disregard of all the necessary means to prevent the effects of constipation.

The autopsy description is singularly unsatisfactory in establishing the cause of death according to our modern conceptions. Meningitis, encephalitis, malaria or in fact one of many other infections may have been the cause of the "inflammatory fever" so called.

Although it was currently believed that Lord Byron's lameness was due to a club foot, Dr. Cameron[4] gives pictures of Byron's boots and lasts, which show that while no deformity of the feet existed, there must have been atrophy of the leg muscles. Trelawny's latest evidence also was that the tendon Achilles was contracted but the feet otherwise perfect. Cameron therefore suggests a cerebral origin for the congenital lameness, and specifically for infantile spastic paraplegia (Little's disease). Descriptions of the lesions of Little's disease could hardly have been expected in the post-mortem findings, forty years before the disease was first described, but the reported changes in the skull and meninges constitute at least a suggestive association with a possible cerebral origin of the lameness.

It is indeed unfortunate that the post-mortem description did not include some statement about the legs of the noble Lord.

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Philadelphia, Pa.

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[4] Cameron, H. C. *Op. Cit.*

BOOK REVIEWS

Geschichte der Medizin im Uberblick mit Abbildungen. A review of the History of Medicine with Illustrations. By Prof. Th. Meyer Steineg und Prof. Karl Sudhoff. Second and Revised Edition, Gustav Fischer, Jena, 1922.

In the remote and early past a good many reviews and epitomes of the history of medicine have been written. One of the earliest, "An Historical Sketch of Medicine & Surgery" appeared in 1782 by Dr. W. Black of London. One of the latest and best was by Prof. Clifford Allbutt (1905). Osler wrote a "Concise History" for the "Encyclopedia Americana," published in 1919. It was not in his best vein. Short histories also have been written by Dr. Roswell Park (1897) and Dr. E. P. Withington (1894).

Aside from Dr. Garrison none have approached this task with such a complete equipment as Professors Steineg and Sudhoff. But besides this equipment the medical historian of today can produce a much more interesting work than was possible thirty or fifty years ago. This is not because he might present it in some specially advanced and modern style, but is due to the fact that much that is new has been learned in recent years about the methods of the fathers of medicine and about their patients and diseases. New facts have been dug out concerning early medical writings, hospitals, materia medica, early surgical operations and instruments. Much of this also can now be presented with pictures which are often quaint and original, and our authors have taken advantage of this fact in the present volume. In their small book of four hundred and forty pages there are two hundred and fifteen illustrations. These consist of inscriptions and designs from the walls of Egyptian temples, reproductions of votive offerings, ancient temples to Aesculapius, cuts showing the surgical instruments of the very remote past and of various nations, and many illustrations of medicinal herbs. A picture is given of the town of Salerno, and there are of course very many portraits of physicians who are also part of history. All these make the book fascinating even if it receives only a casual perusal.

The work begins with primitive medicine and takes it up to the middle of the nineteenth century, but does not undertake to tell about the medicine or the doctors of today, which is really "another story."

Sudhoff deals with the period from the death of Galen to the end of the sixteenth century. The story of the medicine of these days is academic and rather uninspiring until we reach the fifteenth and sixteenth centuries. There were great names during the earlier part of this period connected with Byzantine, Arabic and Jewish medicine, and even with the Monkish medicine of the præsalernian period, but there were no dramatic occurrences and no important and permanent contributions to science. However Sudhoff tells the story in an interesting manner including a charming chapter on Salerno and the teachers of that school. The many and quaint illustrations help make it delightful reading. His description of the first printed medical books of the fifteenth century is complete and should interest collectors of incunabula and students of the beginnings of modern medicine.

A special chapter is given to surgery in the thirteenth century in Northern Italy and to Scholastic and Galenical medicine as it flourished in the schools of Paris, Bologna and Padua in the fourteenth and fifteenth centuries.

Sudhoff ends his part of the work with chapters on Renaissance medicine and describes the great impetus to medical science given in the sixteenth century by Vesalius, Paré and Paracelsus, to the last of whom he devotes nearly six pages.

The parts of the work done by Meyer-Steineg are equally thorough in text, illustrations and interest, but there is not space to go into further details.

In the chapters on the eighteenth and nineteenth centuries the authors give portraits of twenty German and Austrian physicians, four English and Scotch, and only one French (Pasteur), and one Italian. Probably the choice was partly due to accessibility but we would like to have seen Laënnec and Trousseau and perhaps one American (Rush) represented. However, this is a very minor detail. The work as a whole is correctly and skilfully done and it is quite beyond my power to give it technical criticism.

Sometime I would like to see a history of medicine written in which the career, accomplishments and the personality of the really important figures in medicine are dwelt upon, and by means of literary art made vital, living people.

The great majority of the older fathers from Galen on are just names: Dioscorides, Avicenna, Rhazes, Oribasius, Constantin, etc. These we know were very learned and important men in their time, but their lives and works make no part of medicine today, and their real characters and careers form just ghostly shadows flitting through the twilight of enumerative narrative.

But the story of Galen, of Arnoldus, of Cardan, of Vesalius, of Servetus, of Paracelsus, of Eustachius, of Patin and of many others would read like romance. Part of the interest and value of medical history at the present time is the reaction produced on the student and reader by his introduction to adventurous, courageous, dominating or perhaps tragic personalities. This was the sort of thing that Osler delighted in and it was largely through his writings that the present interest in medical history had its start. Sir Clifford Allbutt handled history differently, but gave to it a broad generalization and a fine literary art, as others have done in England and this country.

However, this volume is "static" and it is fundamental in the matter of history that the static should precede and in fact form the basis for the dynamic. So I say again in the term of what was a commonly used prefatory plea to the books of the sixteenth century:

Quem prudens lector mercare et perlege habebis,
Ingentes parvo divitias pretio.

(Buy and read this, prudent reader, and you will have huge riches for a trivial sum.)

CHARLES L. DANA, M.D.

CHRONOLOGIA MEDICA: A HANDLIST OF PERSONS, PERIODS AND EVENTS IN THE HISTORY OF MEDICINE. By Sir D'Arcy Power, M.B. C. J. S. Thompson, M.B.E. Paul B. Hoeber, Inc., N. Y., 1923.

This is an excellent compilation of important dates in medical history with short biographical notes on the chief medical men of all times, accompanied by a chronological list of the most important drugs and therapeutic advances, and a list of the principal universities and schools of medicine with the dates of their foundation. The book will prove a very useful work of reference for ready consultation. The authors have appended to it a list of the "Chief Works on the History of Medicine." It is greatly to be regretted that they did not present the reader with a fuller classified list of books on medical history as such an addition would have been a valuable feature in a work of this character.

FRANCIS R. PACKARD, M.D.

A HISTORY OF MAGIC AND EXPERIMENTAL SCIENCE. During the first Thirteen centuries of our Era. Volumes I & II By Lynn Thorndike, Ph.D. The Macmillan Co., N. Y., 1923.

The close association of magic with the healing art among primitive peoples has long been recognized, and this association has also continued down through the middle ages; but the outgrowth of experimental research from the practice of magical arts, though generally realized, has not so far been adequately presented. The task is vast and presents enormous difficulties calculated to appal the hardiest investigator. Passing from primitive times we find in the priests, augurs and soothsayers of more advanced periods, the same association of magic or religious practices with medicine. So that with the advent of Christianity the difficulty increases as the practices of many of the so-called Fathers of the Church savour strongly of the magic arts of their predecessors in other religions. In the middle ages the labors of the alchemists in many instances may be classed as crude efforts at experimental science although they continued to dabble with astrology, charms and other magical procedures.

Professor Thorndike addressed himself to a truly Herculean task and the monumental work before us attests how splendidly he has accomplished his work. We have seldom read a work manifesting a more thorough research into original sources. The enormous labor of examining and collecting the huge number of manuscripts which contain much of the material on which his work is founded must have required many years, and the care with which he has read these as well as the original texts of the thousands of books which bear on his subject is manifest on every page.

Commencing with the period of the Roman Empire, Professor Thorndike describes the works of Pliny, Galen, and many other writers, analyzing their claims to be regarded as scientific and also making clear the various superstitious and false statements contained therein. "Early Christian Thought" is the subject of Book II, dealing with the writings of Saint Augustine and other Fathers and the most interesting topic of the attitude of the early Christians towards natural science. Book III deals with the "Early Middle Ages," the beginnings of Arabic occult science and the Salernitan school. It is of the greatest value to the reader who wishes to understand the status of medical science at that epoch in its development. "The Twelfth Century" is the subject of Book IV, and the author convinces us that even in that so-called dark age much work was done towards the foundation of real experimental science. The last Book deals with the wonderful pre-renaissance, "The Thirteenth Century," and considers in detail the labors of such men as Petrus Hispanus, Albertus Magnus, Michael Scot, Roger Bacon, Arnald of Villanova, and their contemporaries.

It is rare to find so erudite and profound a work as that of Professor Thorndike's written in such a delightful manner. Marshalling his facts and authorities so as to place beyond doubt the authenticity of his facts, he yet maintains a narrative style which carries the reader along and renders it difficult to put down the book. The old theologians, magicians, alchemists, and physicians seem to live in his pages and we feel a thrill as we read of their lives, passed in what by too many moderns, are apt to be regarded as fruitless labors. The fact is that the authors of the Middle Ages are too often but names to us, their writings closed books, written in unfamiliar tongues. Who now troubles himself to peruse the original works of Albertus, Raymond Lully, or any other of their contemporaries? And yet their names continue to resound through the ages. The answer is obvious. Their writings are contained in rare manuscripts, or early printed volumes, in Greek or Latin, and are to be found only in scattered collections. After the sixteenth century they fell as Lucifer, never to rise again. Professor Thorndike has resurrected them in such a way as to render it possible for any reader to acquire some real and authentic knowledge of the labors of the men who laid the foundations of the science of our day. To the physician who is at all interested in the origins of modern medicine these volumes are of the greatest value. The author has fulfilled to the letter the object of his labor. His book contains a most accurate and complete study of the evolution of experimental science from the mazes of superstition and magic by which it was embarrassed for many centuries. He has written a work which should be in every reference library, and yet is more than what Charles Lamb would have called a *biblia à biblia*, because it can be read with pleasure as a literary recreation.

Francis R. Packard, M.D.

Veröffentlichungen der Schweizerischen Gesellschaft für Geschichte Medizin und der Naturwissenschaften. 1. Dr. Conrad Brunner. Seldwyla, Zurich, 1922.

During the past year there was founded a Swiss Society for the Study of the History of Medicine and of the Natural Sciences. The monograph here reviewed is the first publication under these auspices, and is in every respect worthy of that historic place. It is a thorough study of the part played by the tiny mountain country in the development of medicine, of hospitals and of the care of the sick in the Middle Ages. It is a piece of fine literary writing.

Switzerland, Helvetia, in remote times partook of the high civilization of the Roman imperium, but with the advent of the barbarians from the north and the east the culture of the Romans disappeared, and the achievements of Greek and Roman medicine were lost and blotted out. The eastern part of Switzerland became the home of the Alamanni, the western of the Burgundians who brought with them, particularly the former, their Druidic medicine and herbal, stone and runic magic. In the sixth century Switzerland became a part of the great Frankish kingdom, and participated in some measure in its meager cultural life. Fortunately for civilization, a little Roman and Greek influence had survived in Southern France, at Nimes, Arles and Marseilles, oases in the great barbarian desert. It is interesting to speculate as to what might have happened if a larger sphere of Roman and Greek civilization had survived these Barbarian invasions.

The earliest medical activities in Switzerland, at least in regard to the practice of the healing art, were associated with certain monkish orders, especially that of the Benedictines. Through the activities of St. Columban and St. Gallus important monasteries had been founded in Switzerland, which became centers of monkish medicine. Whatever reproaches may afterwards have been made against the religious orders, in the early Middle Ages their cloisters were the only places where a spark of learning and a spark of humanity survived. But for them, as Macaulay says, European society would have consisted only of beasts of burden and beasts of prey. The cloister of St. Gall had a hospital and a staff of physicians who naturally were monks. Special rooms were provided for the physicians and also for the apothecary. A special building was devoted to blood letting, which was performed not only for disease but also for pennance. The practice reached such degrees in the cloisters, becoming a veritable hematomania, that King Louis IX issued an edict commanding the monks of Pontoise to let themselves be bled not more than six times a year; at their birthday, at the beginning of Lent, at Easter, at the feast of St. Peter, and on the first of November.

Surgery was at a low ebb during the period of cloister medicine, one reason being that the church had forbidden the performance of operations by clerics. This prohibition was favorable to the rise of lay surgery, particularly in Italy, where the universities from the beginning had a more secular character than in France, England and Germany.

Hospitals and hospices were an early result of the spirit that pervaded the better monasteries. A leprosarium was established at St. Gall and a xenodochium or hospital at Ragaz in the tenth century or perhaps earlier. The famous hospital of San Spirito in Rome, the model for hospitals all over the Catholic world, came somewhat later.

As the Swiss cities grew in importance they began to establish civic hospitals with paid physicians and surgeons, the latter merely assistants to execute the commands of the former.

A revolution in the care of the sick came with the Crusades and the founding of the Hospital Orders incident thereto. The knights on their return from the Holy Land established hospitals in all parts of Europe, including Switzerland, but becoming rich and powerful they soon lost interest in the sick and poor, so that the Hospital Orders declined and were soon forgotten.

Obstetrics as a medical practice had no existence. Only one procedure was permitted, Cesarean section on the dead. The operation was indeed commanded by various Church Councils as a means, through baptism, of ensuring salvation to little children. Many other interesting facts regarding medieval medicine are to be found in Dr. Brunner's book, which we trust is the beginning of a series of publications in this little trodden field.

DAVID RIESMAN, M.D.

GESCHICHTE DER ALTEN KÖLNER UNIVERSITÄT. By Adam Wrede. Oskar Muller, Cologne, 1921.

Among the seventeen schools that cared for German higher education during the Middle Ages, Cologne was the fourth to be founded (1388). Its predecessors, Prague (1348), Vienna (1365) and Heidelberg (1386), were all under princely protection, whereas Cologne was a citizens' undertaking and its fortunes fluctuated with the prosperity of the City. As in so many of the intellectual projects of the time where the Dominicans played a leading part, so the foundation of this university was due to the visit of a Dominican, Alexander of Kempen, to the Pope Urban VI. Created by a papal bull of May 21, 1388, and based on the model of the University of Paris, the "Alma Mater Universitas Studii Coloniensis" was thereby given the right to hold lectures and give degrees and quickly entered into a period of fecund prosperity. The preponderating influence of French culture, in customs, methods and terminology, can be read between many lines of the book under review. The first rector, chosen by his brother masters, was Hartlevus de Marka, M.A., and the four faculties were theology, law, philosophy (*scholarium liberalium*) and medicine, of which the medical faculty was the first to receive its statutes (1393). The initial embarrassment for lack of buildings was gradually solved by the formation of colleges (Bursa Montana, etc., later called *gymnasia*), in which teachers and scholars dwelt together somewhat like the English college system.

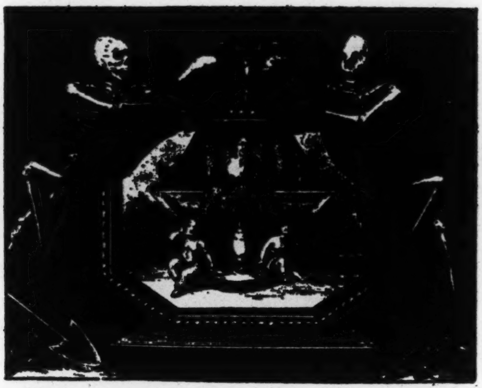
The faculty of law made the most brilliant start and the medical faculty, the most modest, so that for many years no medical professor was appointed. An "Anatomy" (a body for dissection) was not acquired till 1479, after the Emperor Frederick III had decreed that two bodies annually of persons who had died or been executed should be given "mit willen and wissen derselben todtem nechsten frunder den meistern und doctores der ertzney der universitet zu Collen." Nevertheless difficulties in obtaining anatomical material continued here, as in the other countries of the civilized world well through the eighteenth century.

Students matriculated as early as fourteen years of age and went through a complicated initiation, which ended in true teutonic fashion in supplying copious food and drink for the initiators. The usual difficulties with unruly students and between "town and gown" were encountered here as elsewhere and night watchmen came in for their usual share of torment. Music and exercise ("*körperliche uebung*" is still the best expression that the German language can afford) were not neglected, but *causae bibendi* was a frequent complaint. Thus for over a century did the university grow and flourish and its fame spread far beyond the confines of Germany. The Scotch were especially numerous, but so many were without means that *eine schotte* came to mean a penurious student.

With the spread of the Reformation, the theological faculty, the university's most brilliant branch, exerted its influence to save Cologne for Catholicism, but in so doing made many enemies, to the detriment of the whole school. In the sixteenth and seventeenth centuries, also, the city of Cologne's position in the mercantile world was greatly altered for the worse, so that poverty also contributed to the university's decline. By the eighteenth century it had become purely a local school, and in 1786 it received a deathblow when Max Francis, the last elector, raised the Bonn Academy to the rank of a university. The actual death occurred in 1798 by a French decree (the French having occupied the region as a measure of safety) by which the higher educational activities were taken over by the Central School of the Ruhr Department.

Reborn in 1919 from plans devel during the stress of the Great War and sequels, the university was developed Rhenish center of higher education replace the lost University of Strasb Again foreign countries are occupyi Cologne and the Ruhr, as "a measure safety," but the effect that this has had the prosperity of the new university has of course been considered in the pres booklet.

EDWARD B. KRUMBHAAR, M.D.



[Cowper: Anatomia Corporum Humanorum, Utrecht, 1750.]

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